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TECHNICAL REPORT
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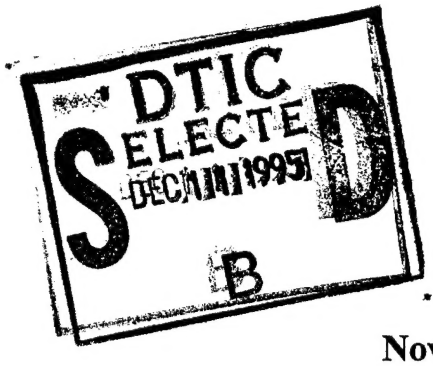
# AN ANALYSIS OF NAVY FOOD SERVICE EQUIPMENT MANAGEMENT AFLOAT PHASE II - CONCEPT DEVELOPMENT

By
Janice E. Rosado
Brian M. Hill




November 1995



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U.S. ARMY SOLDIER SYSTEMS COMMAND
NATICK RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
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This report provides an analysis of current methods used by the U.S. Navy to acquire and support shipboard food service equipment. It also identifies process improvements as organized into five key areas: training, supply, material maintenance (3-M System), equipment standardization, and equipment management. It was found that deficiencies include *the lack of*: a systems definition for food service, training, equipment standardization, material support, and priority of food service operations. Additionally, shipboard specifications, geographical diversity, downsizing, and low level procurement authority have a negative influence on the effective management of food service equipment afloat. The Navy appears to have the basic tools it needs to manage its food service equipment. However, some refinement of these tools is necessary and their effective use will require extensive training and proper management. A standardized, fleetwide equipment management program would provide the oversight needed for the proper modification and use of these tools. Accountability and a willingness to embrace a standardized management concept is *essential* for its success.

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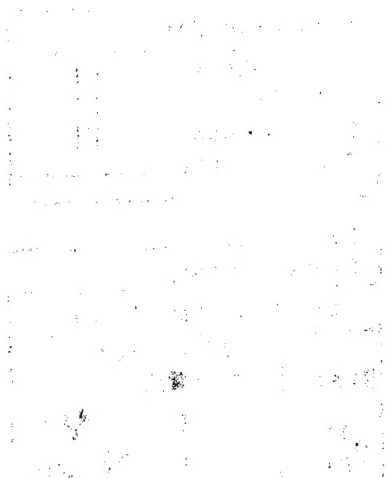

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# PREFACE

The Sustainability Directorate (SusD) at the U.S. Army Soldier Systems Command, (SSCOM) Natick Research, Development and Engineering Center (NRDEC) prepared this analysis to assist in developing new food service equipment management concepts for Navy ships.

The project was conducted as part of the Department of Defense Food and Nutrition, Research, Development, and Engineering Program. The work outlined was performed under Military Service Requirement N95-14 "Navy Food Service 2000, Task 2 - Food Service Equipment Management Study." This is the final report for this project and covers the period 1 November 1994 through 30 September 1995. Natick Technical Report (add #) "An Analysis of Navy Food Service Equipment Management Afloat, Phase I - Survey Results" documents the initial work completed under this project. It covers the period October 1992 through November 1994.

The sponsor for this effort was the Naval Supply Systems Command, Food Service Division (SUP51) the former Navy Food Service Systems Office (NAVFSSO).

The Program Manager for this effort was Mr. Brian Hill and the Project Manager Ms. Janice Rosado of NRDEC's Sustainability Directorate. The authors wish to thank the following individuals for their valuable contributions:

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Captain Robert Bird, Commander, Ms. Genie Wagner and Mr. Jack Hastings of the Navy Supply Systems Command (SUP51), for their continued support throughout this project. The members of the Navy Food Service Management Working Group and Navy Food Management Teams for their valuable input.

# EXECUTIVE SUMMARY

This report provides an analysis of current methods used by the U.S. Navy to acquire and support shipboard food service equipment. It also identifies process improvements and a method to standardize equipment management practices across the fleet.

The Navy does not have a standardized fleetwide program for managing its shipboard food service equipment. There are a number of instructions/standards designed to assist crew members in maintaining, repairing and replacing their equipment. Some are for fleetwide use, while others are administered by the individual fleet or type command. For example, the carrier fleet has developed its own program, the Enhanced Quality of Life Program (EQOL) specifically to aid in the management of food service and laundry equipment.

This Military Service Requirement, Navy Food Service 2000, Task 2 - Food Service Equipment Management Study, was undertaken to review current programs and practices used across the fleet and develop alternatives for a standardized method of equipment management that the Navy could implement fleetwide. To this end, extensive data collection visits were conducted to obtain background information on how the individual type commands and ships manage their equipment and an extensive user survey was conducted. The survey results indicated that areas requiring improvement include communication, parts support and training. Based on these results, two preliminary alternatives were developed. The first alternative, to be managed by the fleet and type commands, addresses all aspects of equipment management including maintenance, repair, replacement, program support and training. The second alternative, which would be managed by the individual ships, uses a modular approach and focuses on training. The results of the data collection, survey and preliminary alternative development have been documented in Natick Technical Report TR-95/029 "An Analysis of Navy Food Service Equipment Management Afloat, Phase I - Survey Results."

Upon completion of the Phase I report, follow-on interviews and literature research were conducted to further define the current system, its merits and deficiencies, with a focus on training and parts support. A number of process improvements and an overall management concept were then developed. This report is presented in five key areas: training, supply, material maintenance (3-M System), equipment standardization and equipment management.

Several deficiencies were found including *the lack of*: a systems definition for food service, training, equipment standardization, material support, and priority of food service operations. Additionally, shipboard specifications, geographical diversity, downsizing, and low level procurement authority have a negative impact on the effective management of food service equipment afloat. This report includes a number of process improvements recently implemented by the Navy and additional recommendations developed by NRDEC, including alternative methods for training and overall equipment management.

In the final analysis, the Navy appears to have the basic tools it needs to manage its food service equipment. However, some refinement of these tools is necessary and their effective use will require extensive training and proper management. A standardized, fleetwide equipment management program would provide the oversight needed for the proper modification and use of these tools. It would be a valuable addition for the ship's supply officers and the operators and maintainers of food service equipment afloat. For a program to have any long-term effect, it would need to encourage self-sufficiency of ship's personnel in the area of equipment management and prevent their dependency on outside support. Accountability and a willingness to embrace a standardized management concept is *essential* for its success.

# AN ANALYSIS OF NAVY FOOD SERVICE EQUIPMENT MANAGEMENT AFLOAT PHASE II - CONCEPT DEVELOPMENT

## INTRODUCTION

The Navy does not have a standardized fleetwide program for managing its shipboard food service equipment. Currently, there are a number of directives used to assist crew members in maintaining, repairing and replacing their equipment. These directives are written and administered by the fleet and by the individual type commands. Additionally, individual ships have developed their own methods for managing their food service equipment. This project was undertaken to review current programs and practices used across the fleet and develop alternative equipment management concepts. The concepts developed in the course of this analysis focus on creating a standardized approach to equipment management which the Navy could implement fleetwide.

An extensive user survey was conducted during the initial phase of this project and has been documented in a Natick technical report, "An Analysis of Navy Food Service Equipment Management Afloat, Phase I - Survey Results." [1] The survey was taken by shipboard Supply, Food Service and Engineering personnel with 125 ships (approximately one-third of the fleet) participating. The survey, as documented in the Phase I report, identified deficiencies in the areas of training, Navy acquisition and maintenance systems, and overall management of food service equipment. During a presentation to the Commanding Officer, Naval Supply Systems Command, Code 51 Food Service Division in November, 1994, a decision was made to develop alternative concepts focused on these areas. This report details the results of the concept development effort completed between November 1994 and September 1995. It is the final report for the equipment management segment of the Navy Food Service 2000 project.

### Objective

The objective of this effort was to develop alternative management concepts that focus on training and parts/logistics support for food service equipment afloat. Alternatives developed were to have the potential to increase efficiency through improved manpower utilization, reduced operation and support costs, and enhanced readiness.

### Approach

Upon completion of the Phase I report, follow-on interviews and literature research were conducted to further define the current system, its merits and deficiencies, with a focus on training

and parts/logistics support. Several process improvements and an overall management concept were then developed. This Phase II report focuses on concept development in five key areas: training, supply, material maintenance (3-M System), equipment standardization, and equipment management.

A detailed analysis of the results of the Food Service Equipment Management Survey was conducted. This analysis identified specific supply and management deficiencies perceived by the user as well as a number of suggested remedies. Training and parts/logistics support were repeatedly mentioned as areas needing improvement as evidenced by the following survey responses:

When asked to identify the top three management problems as related to food service equipment repair, there were five key areas noted:

- parts/COSAL (Coordinated Shipboard Allowance List) support
- training
- low priority of food service operations
- nonstandardized/inferior equipment
- personnel issues (poor communication, low morale etc)

When asked to identify the top three management problems as related to food service equipment replacements, there were four main areas of concern:

- financial constraints
- availability of equipment and parts
- equipment replacement deficiencies - lack of standardization, poor quality, non-compatibility and installation problems
- ordering process - excessive lead times, improper substitutions and backlogs

When asked to rate the importance of a number of changes which may improve food service operations the following were rated as most important:

- better parts support
- training for food service personnel in equipment operation & cleaning
- training for engineering personnel in food service equipment repair
- better quality equipment

The specific deficiencies identified from the survey were then used as the basis of a series of formal and informal interviews with subject matter experts. The purpose of these interviews was to gather the views and recommendations of individuals who are experienced in the issues under consideration and to further explore some of the survey responses. Formal interviews were held during three ship visits, the results of which can be found in Appendix A. Additional discussions were held with subject matter experts from a number of organizations, including representatives of the Naval Supply Systems Command, the Naval Sea Systems Command, and the Defense General Supply Center. Discussions focused on the following areas:

- Training of engineering, supply and food service personnel
- The Navy Supply System
- Ships Maintenance and Material Management (3-M) System
- Standardization of food service equipment
- Food Service Equipment Management Program

A literature search of Navy publications was also conducted to secure a description of current training programs, and the supply, maintenance, and management systems as they relate to food service equipment and parts/logistics support. The results of these analyses and the subsequent development of alternative concepts are presented.

## Background

The following factors, identified through the survey and interviews, will have an impact on training and parts/logistics support alternatives, including the scope and feasibility of implementing a fleetwide management program for food service equipment.

- The Naval Supply System is based on minimum functional requirements.
- Shipboard specifications are more stringent and, therefore, equipment may not be readily available from the commercial market.
- Low level requisition authority for food service equipment often results in the purchase of non-authorized equipment
- A proliferation of different makes and models of the same item makes equipment more difficult to support.
- Food Service is not treated as a system.
- Food Service is generally perceived as having a low priority.
- Downsizing adds to an already overburdened system. Less ships will mean longer deployments, increasing the need for crews to be self-reliant.
- Geographical diversity increases the complexity of supply and maintenance support.
- Slow response time of the Navy Supply System is contrary to ships' deployment schedules. This often results in the purchase of equipment that is not readily supportable through the Navy Supply System.

# TRAINING

## Current System Description

Training is provided through a combination of formal schooling and on-the-job training. Formal schooling commences with "A school," the Navy's basic instruction in a specific job area. There is an opportunity for further formal training through a variety of advanced schools referred to as "C school". C school prepares the sailor for a specific job specialty area. Additionally, on-the-job training sessions, coordinated by a trainee's supervisor, are provided on a regular basis. Correspondence courses, training manuals and computer based training are also available for self instruction. Training is addressed in Chapter 8 of the Naval Supply Systems Command Publication 421 "Food Service Operations". [2]

The Navy Food Management Teams (NFMT) develop and offer hands-on food service equipment maintenance courses for both food service and engineering personnel. Training is available both during assist visits and through classes held ashore. Another training source are the assist visits coordinated by the individual type commands. These include programs such as AIRLANT's EQOL program and SURFPAC's Afloat Training Group which utilize government personnel; and contracted assistance programs such as SURFLANT's Engineering and Maintenance Assist Teams (SEAMAT) and SURFPAC's Galley Laundry Maintenance (GLM) teams.

## Training Deficiencies

The survey and interviews identified a general lack of training in operation, maintenance and supply of food service equipment. Seventy-five percent of the survey respondents, which included supply, food service and engineering personnel, indicated training is not adequate in food service equipment maintenance and repair. Additionally, the survey found that training in food service equipment is not given a very high priority as illustrated in Figure 1.

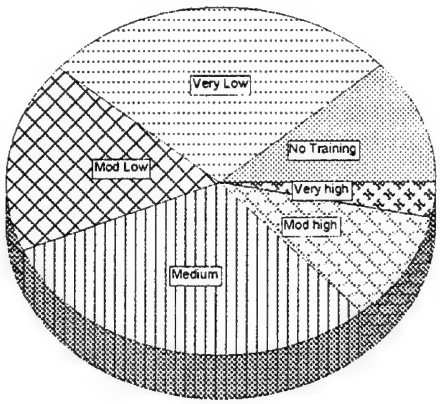


Figure 1. Priority of Training for Food Service Equipment

The following general deficiencies were identified through the survey as well as in discussions with subject matter experts. These deficiencies could be alleviated through additional training.

- Ownership of equipment is unclear.
- There is a proliferation of different makes and models of the same item of equipment.
- Communication between engineering, supply, and food service is lacking.
- Incorrect parts are often ordered.
- There is a lack of cross decking knowledge of food service equipment among food service and engineering personnel.
- COSAL for food service equipment is not kept current.
- SNAP II (Shipboard Non-Tactical Automated Data Processing Program) is not used appropriately to support food service equipment.

Specific training deficiencies include:

*Engineering Department:*

- Engineering personnel are not provided with formal training in the repair and maintenance of food service equipment.
- Engineering personnel are often unfamiliar with the 3-M System for food service equipment.
- Senior managers are reluctant to send engineering personnel for food service

equipment maintenance and repair training.

- Engineering personnel normally are not assigned specifically to food service equipment repair and maintenance.
- Food service equipment repair and maintenance is given a very low priority.

*Supply Department:*

- Supply personnel are not thoroughly familiar with the details of how to make the supply system effectively function in support of food service equipment.
- Food Service Officers are generally junior officers with limited experience in managing food service operations.
- Food Service personnel do not always know the proper operating, cleaning and basic preventative maintenance procedures for the food service equipment they operate.
- Food Service personnel lack the knowledge to identify equipment problems in the initial stages which would allow for early intervention.
- Food Service personnel are unfamiliar with the 3-M System as it relates to the support of food service equipment.
- Lead Food Service personnel are neither sufficiently experienced nor trained to make the supply system function as designed in support of food service equipment.

## Training Requirements

The following training requirements were developed based on analysis of the identified performance deficiencies.

- Instill the need for close and continuous communication and coordination among engineering, supply and food service personnel aboard ship. Stress the basic communications requirement in all officer and enlisted basic and advanced training programs. Only in this way will close and continuous communication become institutionalized and a habitual way of doing business.

- Develop item specific, hands-on maintenance training, specific to food service equipment for engineering personnel. The training should address: trouble shooting, common repairs and techniques, and lessons learned.

- Expand MS training to include basic maintenance indicators and basic food service equipment maintenance concepts. Although it is not the MS's job to maintain equipment, they should regularly monitor the preventative maintenance of all galley equipment to insure its active and effective implementation. A basic knowledge of the mechanics of their equipment will help them in monitoring maintenance and provide for the early identification and intervention of problems.

Training in this area will also help to promote communication between food service and engineering personnel.

- Develop and implement the use of daily operator checks both before and after equipment operation in order to detect and report problems early on.

- Establish and train designated galley maintenance teams whenever possible. This may include assigning specific maintenance personnel directly to Supply to support galley equipment and having MSs be 3-M qualified so they can conduct straightforward open and inspect checks for their equipment in support of the PMS (Planned Maintenance System).

- Insure that all Supply/Food Service Officers and Chief Petty Officers are thoroughly trained on the Supply System and the 3-M System to best utilize these systems in the management of food service equipment. Managers need to fully understand the entire system so they can evaluate equipment alternatives, make informed decisions regarding equipment purchases, and then track procurement actions to insure accurate and timely delivery.

- Coordinate with manufacturer's to design and develop training packages for equipment they furnish to the Navy. These packages would be furnished with each item or be furnished to the supporting Navy agency for reproduction and distribution.

## Training Options

The following are a number of options for meeting the need for additional training for supply, food service, and engineering personnel in the area of food service equipment management.

- Expand current A-Schools curriculum to include training specific to galley equipment for both engineering and food service schools

- Expand current C-Schools curriculum to include training specific to galley equipment for both engineering and food service schools

- Offer separate C-School with established NEC (Naval Enlisted Classification) for galley equipment maintenance and repair

- Contract with the equipment manufacturers for hands-on training
  - ➜ for new purchases
  - ➜ periodic reviews

- Contract with the equipment manufacturers to design and develop training packages for the equipment they furnish the Navy.

- Increase training through shipboard assist visits
  - ➜ Expand FMT training sessions
  - ➜ Expand use of contracted assist teams

- Increase ashore informal training
  - ➜ FMT or through other Navy assets
  - ➜ Contracted

- Increase availability of computer and video based instruction

- Provide shore based assist teams to perform repair and maintenance rather than additional training for shipboard personnel. In addition, this team could be authorized to make all equipment replacement decisions.

## Training Analysis

In evaluating training concepts a number of factors need to be considered including cost, location, impact on mission, level of participation and skill level. Analysis of the training options follow.

- Expanding the training offered in A-School will allow for the greatest participation. However, it would limit the level of training to the very basics. Also, expanding the length of the A-School curriculum would be difficult in respect to the time and funding required.

- Expand current C-School curriculum or offer a separate school for galley equipment maintenance and repair. This option would be advantageous since more specific training could be provided and a marketable skill is obtained by the trainee. However, like A-School, expanding the length of a class and/or adding new classes is extremely limited given restraints on time and money. Participation is a factor since managers are often reluctant to release personnel for off-site training. Additionally, for this option to be effective there would need to be some assurance that individuals trained in galley equipment would in fact be assigned the responsibility for galley maintenance and repairs.

- Contracting with the manufacturer for ship-based hands-on training was an option repeatedly mentioned in the survey results. This would offer the advantage of obtaining item specific training with limited time away from the job. Conversely, the training would be so specific its application may be limited and

training would need to be repeated on a regular basis to account for personnel turnovers. This type of training would be cost-prohibitive except for large, complex equipment items.

- Contracting with the equipment manufacturers for training packages to include video instruction and manuals would be a more cost-effective option, but would lack the active interaction a hands-on training class would allow.

- Increased training through shipboard visits by Navy or contracted assist teams would also be a means of minimizing the time personnel spend away from the job. This option would require additional funding.

- The alternative of offering centralized, ashore training courses may be more cost-effective, but this method has not worked well in the past. Attendance at similar classes presented by FMTs has been poor. Also, smaller ports would not be able to support their own training center so classes would need to be imported from other locations.

- Increasing the use of computer and video based training would be a cost and time-effective option, but would rely on the discipline and motivation of the individual users.

- The last option, providing shore-based assist teams in lieu of training, would insure maintenance and repair by experienced, well trained, individuals. This option has a serious deficiency in that it doesn't provide for the ship while on deployment. Comments were made during the interview process on the dependency of shipboard personnel on assist visits and the adverse effect this had on equipment readiness while deployed. Equipment often had to wait until the ship returned to its home port before being repaired.

# SUPPLY

Equipment acquisition and material support were identified as the leading critical areas in food service at the Naval Sea System Command-sponsored "Galley of the Future" workshop held in July 1994. Issues related to both equipment procurement and support were also raised repeatedly in the survey responses as well as in the follow-on interviews. Survey responses indicate the problem of logistics support is exacerbated by the proliferation of food service items, including both the large number of items supported by the Navy Supply System and the additional items purchased outside the system. This causes the system to be non-responsive due to limited resources, both the time required to search the system for the right part and the funding to maintain such a large number of spares. A "Catch 22" appears to be operating within the current supply system. The acquisition of nonstandard equipment is frequently caused by non-availability of standard items through regular supply channels. This results in nonstandardized and sometimes inferior equipment, which is not supported by the system, being purchased. When the item fails it must be replaced and the cycle starts again. In order to fully understand system deficiencies, examination and definition of the current Navy supply systems were first made.

## Current System Description

The Navy acquisition system is complex. The logistics system that supports the afloat elements of the U.S. Navy consists of several internal and external supply systems, functioning under an echeloned Navy supply structure. These systems are governed by a series of Navy, Defense Logistics Agency (DLA), and General Services Administration (GSA) publications containing detailed policies and instructions. The following paragraphs identify the major organizations/players in the system, and describe how the system supplies ships.

### Major Organizations & Players:

The Navy organization that administers, manages and implements the supply system is divided into the following echelons as identified in NAVSUP Publication 485, Afloat Supply Procedures:[3]

- The Navy Department and Shore Activities
- Fleet Activities and Components Performing Supply Activities
- Afloat Supply Organization
- Fleet Support

Figure 2 illustrates the major Navy supply organizations. It is followed by a description of the above echelons and their responsibilities as extracted from NAVSUP Publication 485.

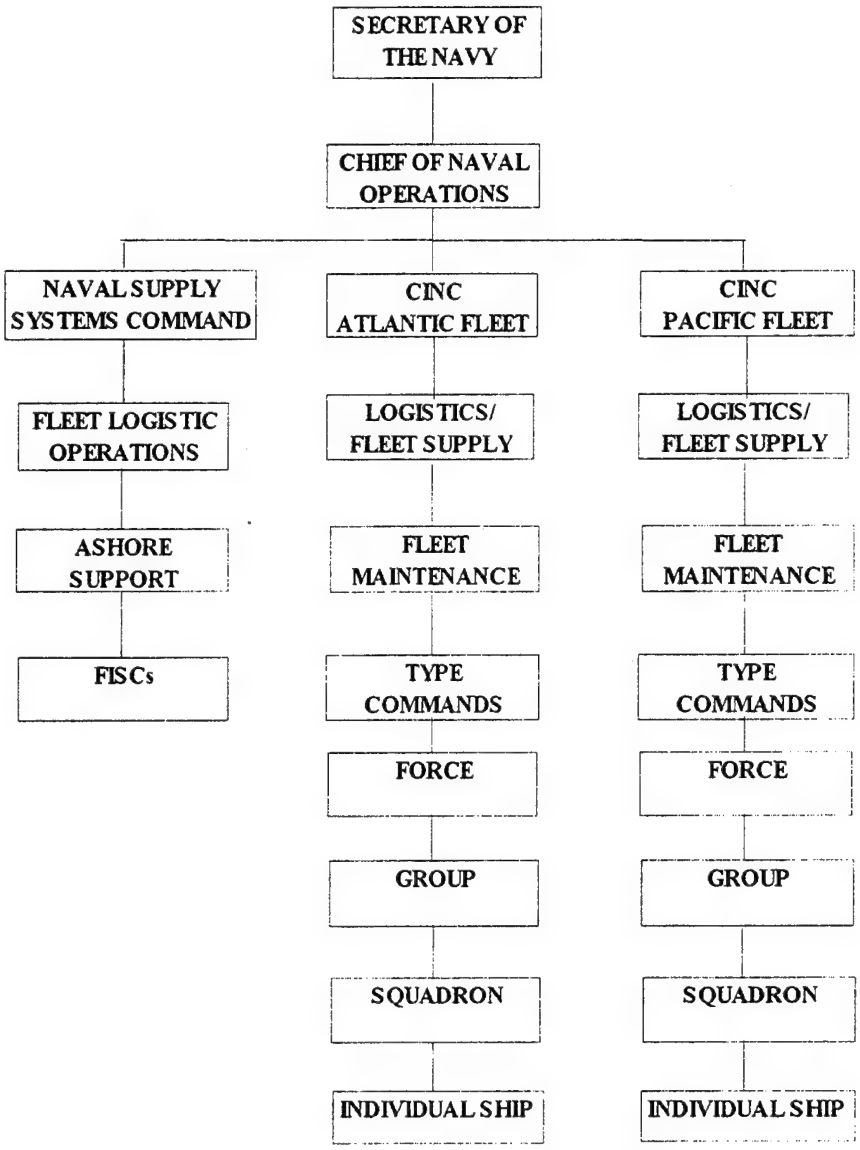


**Figure 2. Major Navy Supply Organizations**

***Navy Department and Shore Activities:*** This level of the Navy supply organization is comprised of the Secretary of the Navy, the Chief of Naval Operations, and the Naval Supply Systems Command. The Secretary of the Navy and Chief of Naval Operations do not directly interface with the supply system and are not addressed in this study.

The Naval Supply Systems Command (NAVSUP) is responsible for supply management policies, methods and functions including provisioning, cataloging, inventory management, distribution, and materials handling. NAVSUP also provides technical guidance with respect to the preparation and service of food in galleys and in the planning and layout of supply spaces ashore and afloat. In executing these duties, NAVSUP exercises command over fleet logistic operations including the Fleet and Industrial Supply Centers (FISC). The basic mission of the FISC is to provide a single point of contact for logistic support to afloat units. As such, the FISC is generally the individual ship's primary interface with the Navy Supply System.

***Fleet Activities and Components Performing Supply Activities:*** This level of the supply hierarchy consists of the Commanders In Chief (CINCs), Atlantic and Pacific Fleets and their subordinate commands and staff as illustrated in Figure 2. Each of these commands has a supply staff that: oversees the functioning of the Navy supply system within its jurisdiction, issues supplemental supply instructions, and monitors the supply status of the command. This study indicates that these intermediate echelons do not generally participate in the requisition and issuing of food service equipment.

***Afloat Supply Organization***: This is the organization within each ship that is responsible for the proper performance and administration of all supply department functions. The head of the supply department is the supply officer. The supply officer is either a Supply Corps officer or a line officer designated by the commanding officer. The supply officer may be assisted by a food service officer and leading MS chief petty officer (CPO). The supply officer is responsible to the commanding officer for the proper performance and administration of all supply department functions. Afloat supply functions are categorized into material support and service functions. Material support functions relate to operational and maintenance requirements (e.g. procurement, receipt, stowage and issue of supplies and accounting), while service functions entail operating facilities (e.g. general mess, including the preparation and service of food; the ships stores, laundry/dry cleaning and related activities). Figure 3 depicts the typical organization of a small fleet unit's supply department, and Figure 4 depicts a large unit's supply department.

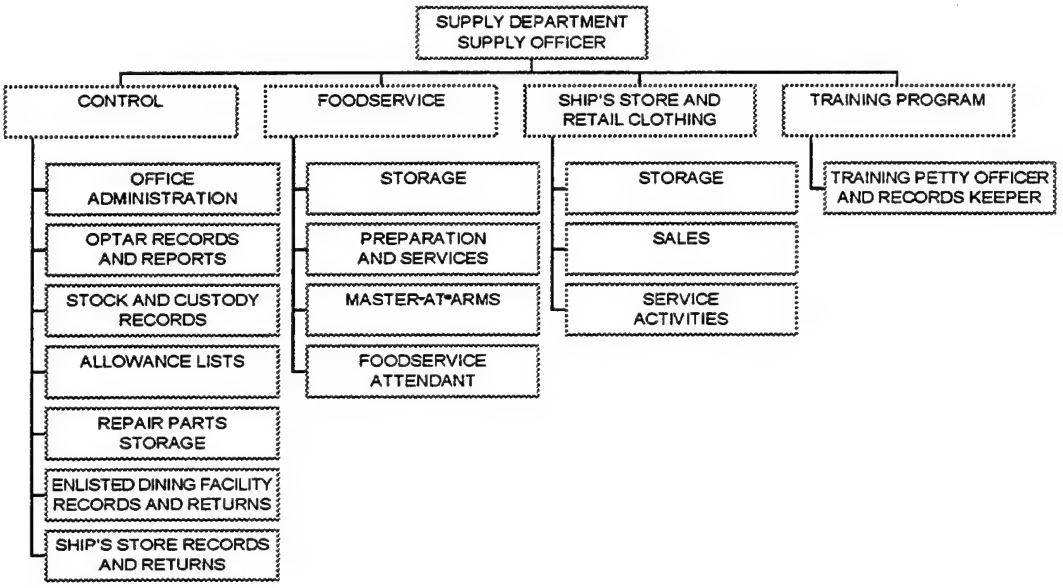


Figure 3. Afloat Supply Organization - Small Fleet Unit

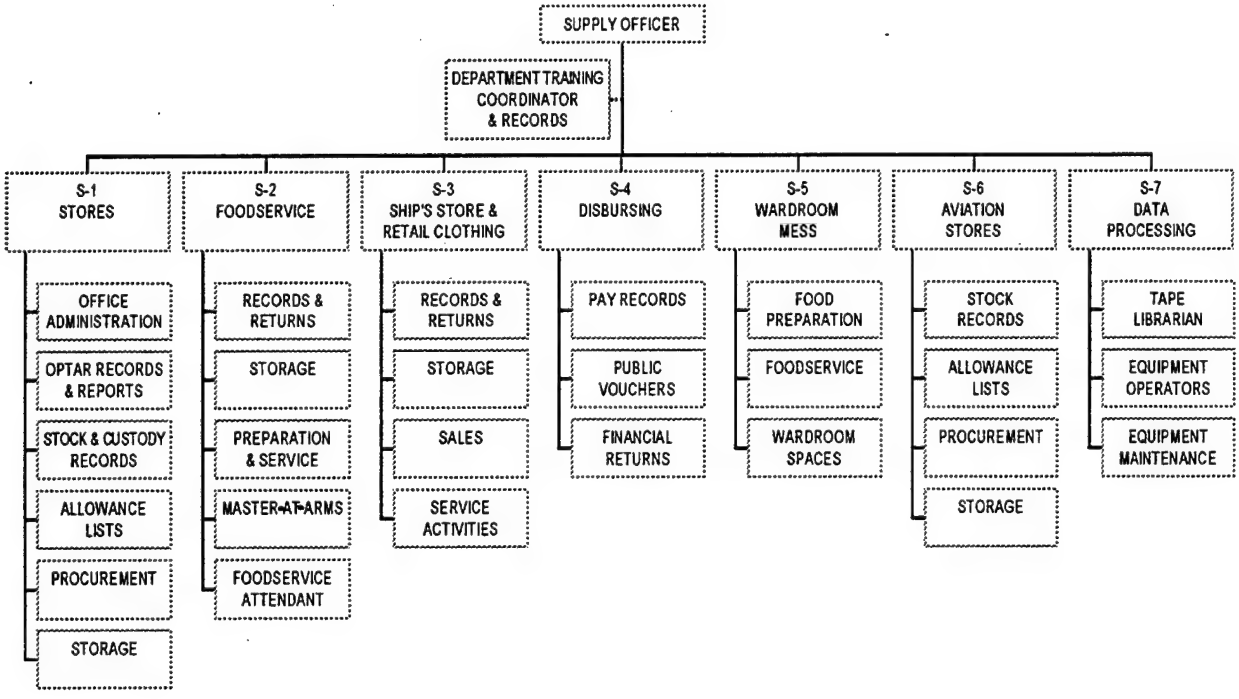


Figure 4. Afloat Supply Organization - Large Fleet Unit

***Fleet Support***: The Navy provides supply support to its ships under all operating conditions. Operating forces are supplied through their own provisions with two echelons of resupply. The first echelon being from ships of the Combat Logistic Forces (CLF), the second echelon being from ashore activities. Ashore activities include naval supply centers, depots, shipyards and other activities within the continental United States, and overseas bases for deployed forces.

**Major Supply Systems:**

The acquisition system that supports the Navy is a complex assemblage of processes, consisting of several semi integrated, semi independent supply systems. The major component systems described in NAVSUP Publication 485 are:

- Integrated Navy Supply System
- Navy Supply System
- Local Purchase Supply System
- General Administration Supply System

The ultimate purpose of these major supply systems is to respond to requests for equipment and repair parts from the individual ship. Therefore, any attempt to streamline the Navy supply process must address all elements of the process, including the ship's internal procedures for generating the initial request. Through several interviews with shipboard supply and food service personnel, a description of the general food service equipment supply process currently in use has been developed. This process, the "Afloat Supply Process," will be discussed in detail in a later section.

The following sections describe the external interfaces and internal functions of each system and how they support the individual ship. Graphic illustrations, which have been developed by the Navy Supply Corps School for the Basic Qualification Course for Supply Corp officers, have been included. It should be understood that the Navy and Defense Logistics Agency (DLA) Supply Systems are much more complex than these illustrations indicate. They represent only a skeletonized view of the system to assist in clarifying the relationships of the various elements. For each of the illustrations a description is provided with items enumerated to correspond to the numbered action lines shown in the figure.

***Integrated Navy Supply System:*** The Navy Supply System is not the sole supporter of the Navy. It is integrated with the Defense Logistics Agency (DLA) Supply System. The DLA is a supply organization which is assigned management responsibility and control of items in common use by all military services. About 60% of the line items in the integrated Navy Supply System are managed by DLA. Management of the DLA supply system is exercised through DLA headquarters in Cameron Station, Alexandria, Virginia. The role of DLA headquarters in the

DLA supply system is similar to the role of the Naval Supply System Command within the Navy Supply System. Specific DLA installations manage certain items. For example, the Defense General Supply Center (DGSC), Richmond, Virginia, is the major supplier of food service equipment to the Navy. The interface with the Navy Supply System is normally through a FISC, an element of NAVSUP. Figure 5 gives an example of how the Navy Integrated Supply System operates to fulfill a ship's request for a piece of food service equipment in a case where the item is readily available. It includes the following steps.

1) The ship submits a requisition to the local FISC for a food service equipment item.
2) FISC researches its records and determines that the item is in stock and issues the material to the ship.
3) FISC makes an issue transaction report to the DLA food service equipment inventory manager, DGSC.
4) DGSC, after applying the issue report to its master file, determines that the stock of the item is below the required level and issues a contract to XYZ Corporation to replenish the local FISC.
5) XYZ Corporation ships the material to the FISC.
6) FISC makes a receipt transaction report to DGSC.

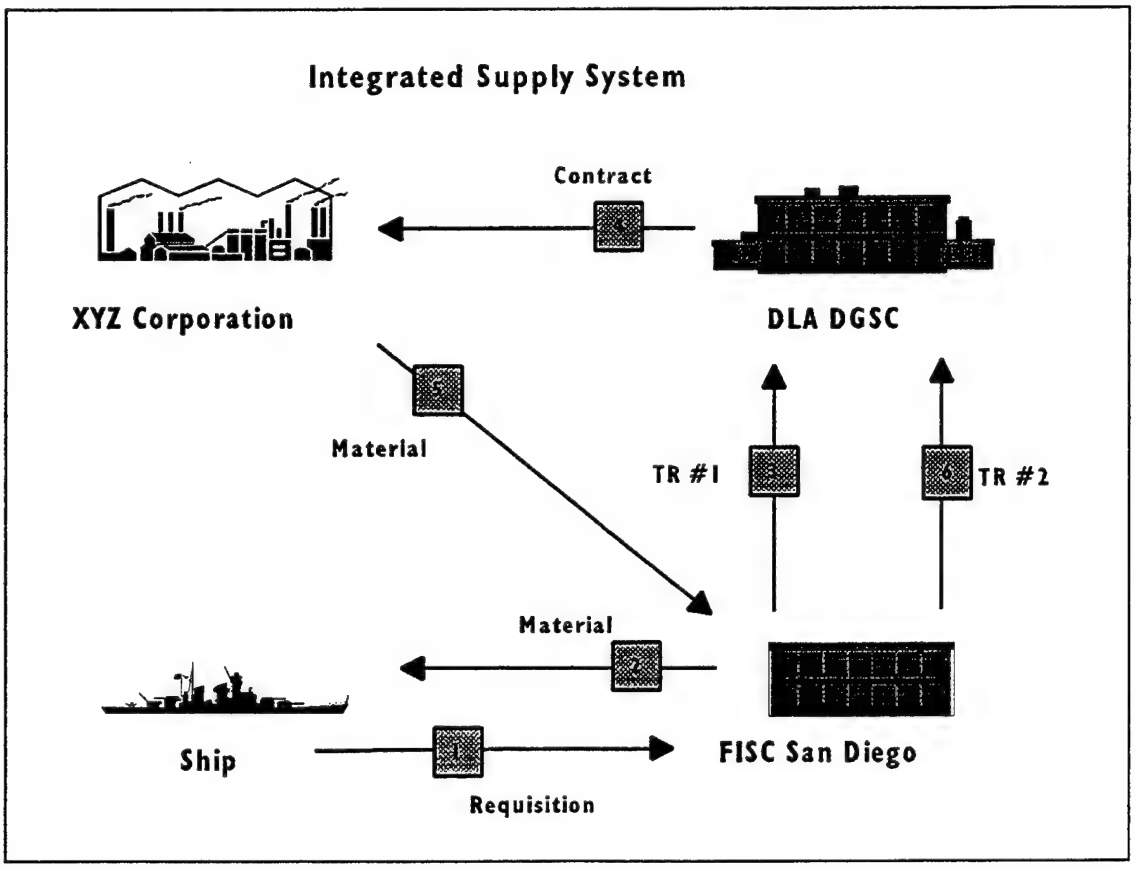


**Figure 5. Integrated Navy Supply System**

***The Navy Supply System:*** In general, the term "Navy Supply System" describes a system whose purpose it is to provide for and meet selected material support needs of the Department of the Navy. The Commander, Naval Supply Systems Command is charged with the direction of this system. There are, however, several intervening and possibly competing activities between the supplier and the ship. Figure 6 depicts an example of the operation of the Navy Supply System in the event that a repair part not available through the local FISC is ordered. The steps for this operation are:

1) The ship submits a requisition to FISC, San Diego for a food service equipment repair part
2) FISC researches its records and determines that the item is not in stock and refers the requisition to the Ships Parts Control Center (SPCC)
3) SPCC, after researching their master records and determining that this item is in stock at FISC, Oakland, refers the requisition to FISC, Oakland
4) FISC, Oakland, issues the repair part to the ship
5) FISC, Oakland, makes an issue transaction report to SPCC
6) SPCC, after applying the issue report to its master file, determines that FISC, Oakland's stock of the item is below the required level and issues a contract to XYZ Corporation to replenish FISC, Oakland
7) XYZ Corporation ships the material to FISC, Oakland
8) FISC, Oakland, makes a receipt transaction report to the SPCC

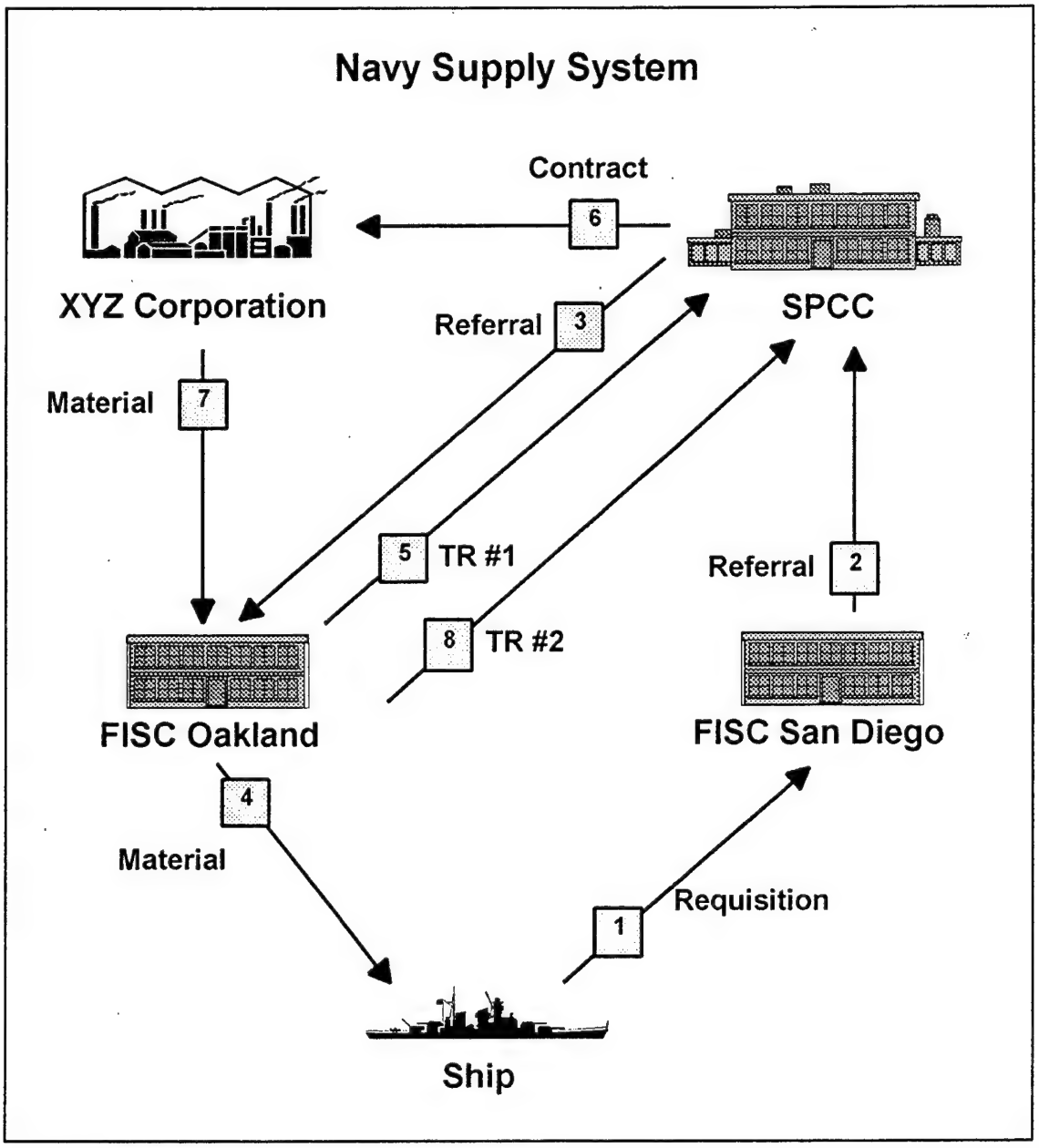


**Figure 6. Navy Supply System**

***Local Purchase Supply System***: The Naval Supply System allows for local purchase of equipment, parts and services by individual ships. This system is subject to command and fiscal constraints. Local purchases are often made when the required delivery date cannot be met by regular supply channels. Figure 7 illustrates an example of how the Local Purchase Supply System works and is described by the following steps.

1) The ship generates a request for local purchase based on a required delivery date.
2) The requisition is forwarded to a pierside procurement office, a subordinate of the local FISC.
3) The pierside office reviews the request and approves or denies the request based on the availability of funds, accuracy and completeness of the documentation, and whether the item is acceptable/allowed for shipboard use.
4) Once the pierside procurement office approves the request, a contract is issued to a local vendor.
5) The vendor provides the service or material.

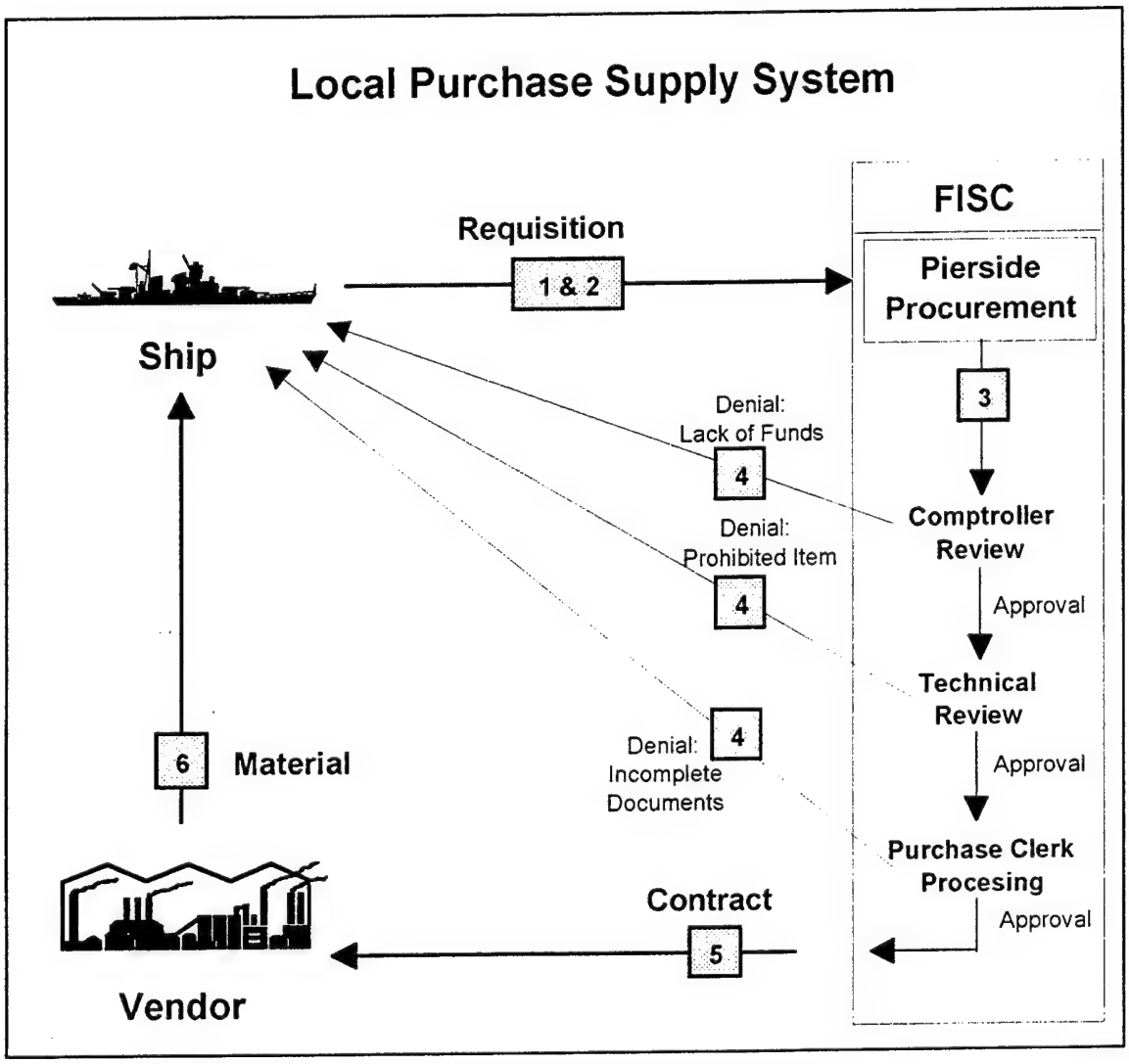


**Figure 7. Local Purchase Supply System**

***General Supply Agency Supply System***: The General Supply Agency (GSA) manages common items for all Federal agencies. This system may be used to order certain items such as office furniture. It is generally not used for supply afloat. The Navy interface for GSA material is through the local supporting FISC. Figure 8 gives an example of the GSA Supply System which operates as follows:

1) The ship requests a GSA item and forwards the request to the local FISC.
2) The FISC forwards the request to GSA.
3) GSA issues the item to the FISC.
4) FISC forwards the item to the ship.

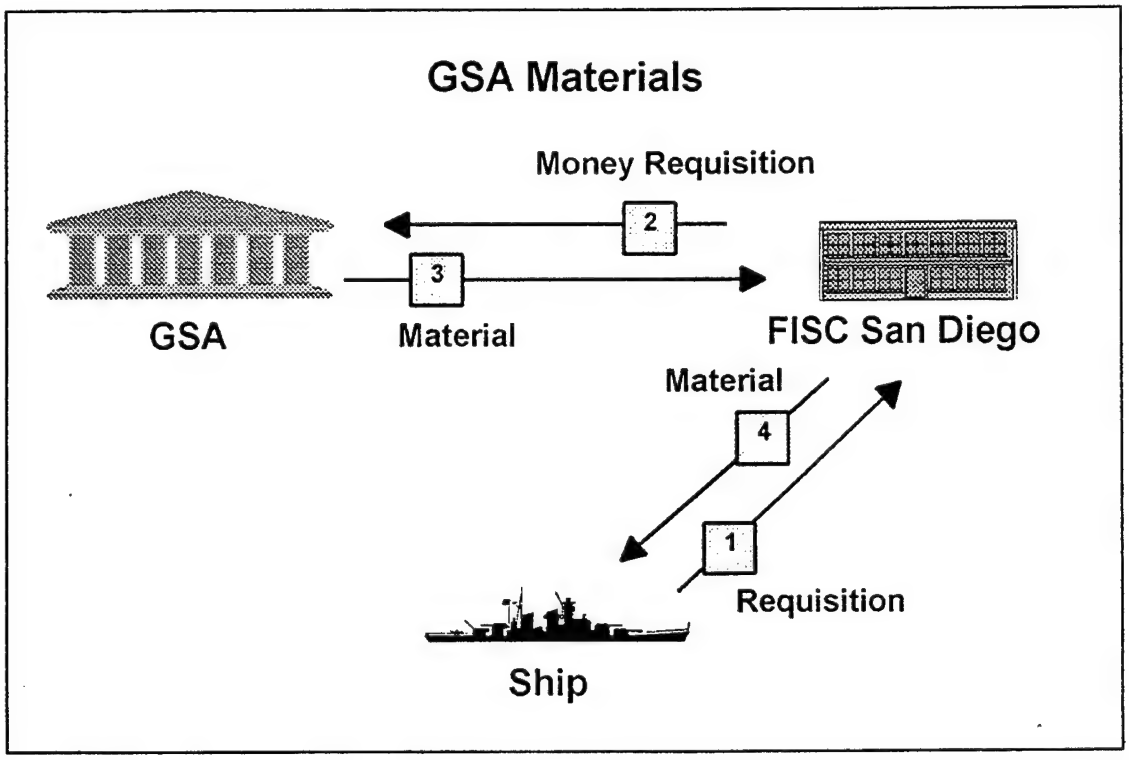


**Figure 8. General Supply Agency Supply System**

***Afloat Supply Process***: The Afloat Supply Process is the internal processes a ship executes to order an item and the interfaces with the Navy Supply System through the local supporting FISC. This process, as depicted in Figure 9, was defined through a number of interviews with shipboard Supply and Food Service personnel. The results of these interviews are available in Appendix A. The interviews indicated that cycle times of several days to two weeks are common for generation of the initial request. Response times from SPCC and the local FISC typically range from one to six months.

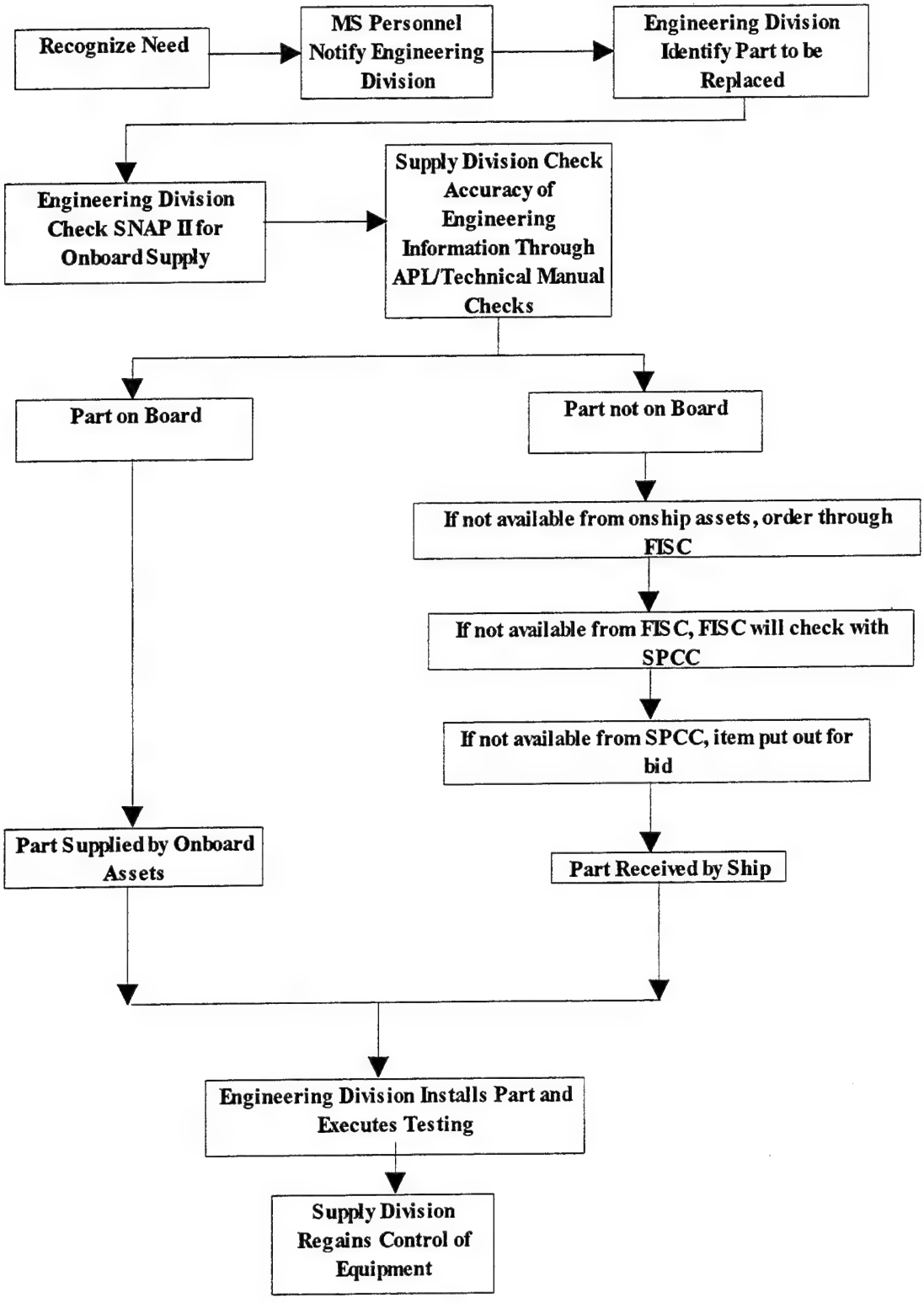


Figure 9. Afloat Supply Process

**Supply Analysis**

- Non-availability of equipment and parts was cited repeatedly throughout the survey and interviews
  - ➜ 73% of the survey respondents replied repair parts were, at best, "sometimes" available aboard their ship
  - ➜ The survey identified the most common causes of food service equipment failure, in priority as:
    1) Excessive use
    2) **Lack of parts support**
    3) Improper operation
    4) Equipment not properly adapted for shipboard use
    5) Lack of preventative maintenance
    6) Improper cleaning
    7) Improper preventative maintenance
  - ➜ The survey further identified the most common limiting factor for repair of food service equipment, in priority, as:
    1) **Obtaining repair parts**
    2) **Identification of required repair parts**
    3) Identifying the problem
    4) Budget constraints
    5) Getting the right person from engineering to respond
    6) Getting engineering to respond to the trouble call

- Equipment is not adequately supported by the COSAL *
  - ➜ Over half of the survey respondents indicated they had COSAL support for less than 75% of their food service equipment

- Identification of correct replacements is often a problem; thus, incorrect items are ordered
  - ➜ Technical manuals are not current/correct
  - ➜ Lack of communication between food service, supply and engineering

- Users infrequently conduct warranty research on failed equipment
  - ➜ 51% of survey respondents indicated they research warranties never or almost never

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* Coordinated Shipboard Allowance List (COSAL) is an authoritative document which lists the equipment/components installed in a ship to perform its operational mission, the repair parts and special tools required for the operation, overhaul, and repair of equipment/components; and the operating space items and consumables necessary for the safety, care, and upkeep of the ship. It is both a technical and a supply document.

- Specific problems with the ordering process included:
  - ➜ lack of funds/low priority of food service
  - ➜ excessive lead times
  - ➜ backlogs
  - ➜ incorrect items being issued as a result of procurement actions not being clearly marked and adequately reviewed to insure compatibility with shipboard usage

- Untrained supply personnel do not know how to best make the supply system support the ship

- Lack of a structured program for replacements
  - ➜ 60% of Supply and 80% of Engineering personnel who responded to the survey indicated that they did not have or know of a structured program for managing the replacement of food service equipment

- Poor quality equipment
  - ➜ Lack of a simple, timely method to purge system of poor quality equipment
  - ➜ Substitutions (inability to get make/model ordered)

Better parts support was considered the most important issue in improving food service operations as rated by the survey respondents. Related issues of training and improved acquisition support also rated as being very important.

## Current Initiatives

In 1994, DGSC initiated the use of Customer Value Contracts (CVC) for food service equipment. CVC is a contracting technique employed by DGSC to give food service managers the power of brand choice. Through CVC, ships can request specific food service equipment items by manufacturer. This gives the manager the ability to seek the best buy in terms of quality, life cycle cost, and performance. Each manufacturer's model is assigned its own specific National Stock Number so the user can requisition exactly the piece of equipment that meets their requirements. Equipment is shipped directly from the manufacturer's inventories generally within 30 days. The user gets a "fresh" piece of equipment with full warranty. Currently, CVC contracts are in place for major food service equipment groups including ice makers, bread slicers, meat slicers, deep fat fryers, baking and roasting ovens. Contract awards for other equipment groups are in progress.

This initiative offers an effective solution to several problems currently experienced by the Navy food service equipment supply system. It affords the option of specific equipment selection, fresh warranty, just-in-time delivery, quick response and reduced administrative processing. It is an excellent example of streamlining the logistics process. While CVC in itself does not promote the reduction of equipment models and standardization, it does offer Supply Officers a tool to

help standardize their food service equipment. Through informed decisions, Supply Officers can use CVC to purchase quality equipment based on previous performance. CVC will also help to increase the use of 1 for 1 replacements. This will help to increase supportability and reduce costs, since the item will have the same footprint -- easing installation -- and can make use of existing spare part stockages.

There is also an effort underway to place the Shipboard Food Service Equipment Catalog on-line. This would enable the customer to requisition equipment directly from the catalog, supporting a "paperless" supply system.

# 3-M SYSTEM

## Current System Description

The 3-M System (Ship's Maintenance and Material Management System) is the foundation for maintenance and repair of equipment in the Navy. It is a management tool used to plan, acquire, organize, direct, control and evaluate both the manpower and the material required in support of preventative and corrective equipment maintenance.

The Naval Sea Systems Command manages and directs all aspects of a ship's 3-M System throughout the Navy. The latest version of the implementing instructions is OPNAVINST 4790.4C, 7 November 1994.[4] The major players aboard ship in the implementation of the 3-M Systems are the 3-M Coordinator, the Supply Officer, the Engineering Officer, the Food Service Officer, and their department members.

## 3-M System Analysis

Survey results indicated that in general the system is effective. Over 74% of respondents stated that the 3-M System is effective or very effective. However, write-in responses indicated some serious deficiencies. The following deficiencies were identified through the survey and interviews:

- Proper implementation of the 3-M System for food service equipment is directly linked to improved functioning of the Navy acquisition system.

- Engineering, Supply, and Food Service personnel in general are not trained in the 3-M System implementation for food service equipment.

- Lack of good communication among supply, engineering and food service exacerbates the 3-M System problems. Maintenance actions are not effectively coordinated/monitored between the departments.

- There is a lack of clarity and standards for defining and assigning ownership and responsibility for food service equipment. This is particularly true in relation to the performance and monitoring of preventative maintenance, fostering weak implementation of the 3-M System.

- The 3-M System is not uniformly enforced for food service equipment. When the 3-M System is not kept up-to-date, deficiencies in COSAL support are common.

- Equipment is repaired and replaced primarily only when broken. Little attention is paid to PMS and maintenance indicators; thus, no lead time is available to order repair parts or a replacement. This places the ship in a situation of not having a piece of equipment operational, possibly for an extended period of time. Also, when equipment does not receive the preventative maintenance it requires, it will fail before its expected end of service life. This places additional requirements on an already strained system.

- The system is too time-consuming.

## Current Initiatives

NAVSEA is currently implementing initiatives to increase the understanding of the 3-M System throughout the fleet through the publication of updated manuals. They are also making Equipment Identification Code (EIC), Allowance Parts List (APL) and other maintenance-related data more readily available to 3-M users through the use of CD ROMs. NAVSEA's current implementing instructions, OPNAVINST 4790.4C, 7 November 1994, explains the 3-M System in detail and is an excellent reference. A companion volume is the Ship's 3-M Data Systems Users Manual.[5] This document describes in detail all reports that are available to 3-M users from the NAVSEA Logistics Center (NAVSEALOGCEN). Additionally, the NAVSEALOGCEN has recently developed two prototype compact disks containing information on EICs and APLs. These disks will aid in identifying the correct item and its EIC and locating the correct APL for a piece of equipment. This initiative will assist in the process of identifying the correct item or part and maintaining accurate records for future reference.

# EQUIPMENT STANDARDIZATION

## Current System Description

Analysis of the survey and interview data indicates that the lack of standardization in the procurement and design of food service equipment and shipboard facilities has a direct, deleterious effect on the ability of the Navy to feed shipboard personnel and maintain its equipment. Currently, the Navy allows contractors leeway in building and equipping ships in the food service area. During construction and major overhauls the ship's crew has a degree of freedom in the redesign and equipping of the food service facilities. This system encourages the proliferation of makes and models of similar equipment, with the resultant impact on the supply and maintenance functions.

## Standardization Analysis

The results of the surveys, interviews and literature searches strongly indicate that, with regard to food service equipment, Navy ships of the same class are neither designed, constructed, or supplied to the same standard. There is a proliferation of different makes of the same equipment. This obviously has a major impact on supply, maintenance, and training.

- The different brands and models makes maintenance and operation difficult, requiring personnel to receive more training and retain more information.

- The supply system is required to support more items and parts than is absolutely necessary. This is a primary cause of a lack of spare parts and a sluggish supply system. It is also a costly practice.

- The specifications and quality vary among items described as authorized substitutes for each other.

- Ships experience difficulty in identifying the correct replacement (e.g. ship compatible, hatch compatible, same specifications as the replaced item).

- During construction and overhaul, contractors and ship's crew (Commander and Supply Officer) may make alterations to the intended design of a galley and supply of specific food service equipment.

- There is a low level purchase authority for food service equipment making accountability more difficult.

- Lack of 1 for 1 replacements may result in additional costs for installation modifications and material support.

## Current Initiatives

Defense General Supply Center (DGSC), in concert with NAVSUP 51 and the Navy Ships Systems Engineering Station (NAVSSES), has instituted Customer Value Contracts (CVC) for requisitioning food service equipment. Through expanded application of this contracting vehicle to all food service equipment groups and its use in acquisition for new construction and major overhauls, the Navy can make a positive move toward standardization.

# EQUIPMENT MANAGEMENT

Although, the focus of this effort was to concentrate on the areas of training and parts/logistics support, a general description of an equipment management program is provided. A centralized source of technical expertise, dedicated to the individual ships, is a valuable tool as indicated by the success of AIRLANT and AIRPAC's EQOL programs. The program, as envisioned, would provide a means of implementing a standardized equipment management methodology across the fleet. It would address the many components of equipment management including the interrelationships among shipboard food service, supply and engineering personnel and the ashore food service community. A comprehensive program would provide the following:

- Technical assistance in the procurement, maintenance and repair of food service equipment.
  - ➜ Advance planning
  - ➜ Replacement decision authority
  - ➜ Manager for food service equipment data bases
  - ➜ Networking capability to provide alternative sources of supply
  - ➜ Centralized expertise to address systemic problems
  - ➜ Facilitator for equipment standardization
  - ➜ Government oversight for contracted equipment installation, maintenance and repair
- Training coordinator
- Communication facilitator
  - ➜ Foster shipboard communication regarding food service equipment
  - ➜ Liaison with fleet and type commands
  - ➜ Liaison between ship and shore procurement activities
  - ➜ Liaison with ship designers/shipbuilders
  - ➜ Liaison with equipment manufactures
  - ➜ Liaison with inspection/assist teams
- An advocate for food service
  - ➜ Promote food service as a system
  - ➜ Promote food service as a morale booster
  - ➜ Enforce accountability to Navy regulations
  - ➜ Encourage effective use of management tools

# CONCLUSIONS

Logistics support for shipboard food service equipment is deficient for a number of reasons. The supply system for food service is fragmented. Lack of a systems approach results in equipment being purchased individually, without regard to the galley as a whole and the maintenance and supply systems required to support the equipment. This is exacerbated by the relatively low level of requisition authority for food service equipment, a supply system which is slow to respond, a global mission with lengthy deployments, and an apparent lack of training and/or accountability of personnel to purchase and maintain equipment according to set standards. Lack of communication between the user (food service) and the maintainer (engineering) generates a myriad of difficulties including: slow response for equipment repairs, purchase of equipment without regard to installation and maintenance requirements, and defining the responsibility for the updating of records such as maintenance cards and parts listings. Finally, the above deficiencies result in a food service system that is burdened by a lack of equipment standardization. A proliferation of different makes and models of equipment results in an overburdened system with regard to parts support, maintenance, and training.

Although the Navy appears to have the basic tools needed to manage its food service equipment, the above deficiencies must be addressed in order for these tools to be used effectively. Most of these deficiencies are commonly acknowledged by the Navy food service community. For example, a recent article in the Navy food service publication, Galley Gaff, cited the following basic needs for the proper management of galley equipment:[6]

- Two-way communication between those who 'use' and those who 'fix'.
- Continually updating COSAL to ensure that all needed parts are onboard.
- A progressive training program in place to keep the training curve in a positive arc.
- Familiarization with technical manuals and PMS cards by operators to ensure proper maintenance is being accomplished.

The following outlines the specific deficiencies in the areas of training, logistics support, the 3-M System, equipment standardization, and overall equipment management.

## Training

Survey results indicate the lack of training for food service equipment for both food service and engineering personnel. Engineering personnel do not receive formal training in food service equipment maintenance and repair. Even when courses are made available, there is a reluctance by managers to send their personnel. And, although training is provided for food service personnel, the survey indicated that, in general, personnel are underskilled in the proper procedures for the operation, cleaning, and performing basic preventative maintenance of

equipment.

In general, although supply and maintenance systems are in place, personnel are neither sufficiently experienced nor trained to make these systems function as designed for food service equipment.

## Supply

The supply system is complex and not necessarily user friendly. It currently relies on paper-supported transactions to a large degree and lacks an efficient method of forecasting and distributing supplies. These deficiencies are complicated by the lack of equipment standardization. There are far too many items in the system to support; therefore, the system has become extremely slow to respond to requests for parts and equipment. For these reasons, personnel for expediency sake often choose to circumvent the system when making equipment purchases. When this occurs, the new item may not be supportable by the system, making future repairs more difficult.

At the ship level there appears to be a lack of advance planning for food service equipment replacement. Accountability in the purchase of food service equipment and enough qualified shipboard personnel to support the system are also lacking.

## 3-M System

The 3-M System does not appear to be implemented to required standards for food service equipment. Since it is the driver for material management, its proper implementation is directly linked to improved functioning of the Navy acquisition system. Training is lacking as well as an understanding of the responsibilities of the individual departments/divisions in implementing the system. Interviews indicated a lack of a Navy-wide standard for a designated "owner" of food service equipment with defined responsibilities. This fosters weak implementation of the 3-M System.

## Equipment Standardization

There is a proliferation of different makes/models of food service equipment across the fleet and a lack of standardization in the design of galley spaces. This is, in part, due to a lack of accountability regarding equipment replacements.

Standardizing equipment will help to simplify supply, maintenance, and repair of food service equipment as well as the training required for the personnel who operate and maintain it. However, in order to effectively standardize food service operations, the Navy must first change

the mind-set that makes allowances for the disregard for standards in the design and supply of food service equipment and facilities. While recognizing the need for the supply system to be responsive to deployment schedules, Supply Officers should be held accountable for maintaining equipment and design standards when ordering new equipment. Food service and maintenance personnel should be actively involved throughout the planning stages and have direct input in the design and layout of food service spaces and equipment selection decisions. Their active involvement in the planning stages may help to circumvent changes later.

## Equipment Management

A standard management program for food service is lacking. Management practices vary from ship to ship. A fleetwide program may be a positive step towards implementing changes to the supply and maintenance systems and to encourage and support training initiatives.

# RECOMMENDATIONS

The following recommendations are based on the analysis of survey results, interviews with subject matter experts, literature research, and the experience of professional logisticians. Recommendations have been organized under the five topic areas.

## Training

A number of options were presented in the training section including: expanding the capabilities of the Navy Food Management Teams for shipboard training and/or contracting with equipment manufacturers for hands-on training; developing lesson plans addressing critical food service equipment subjects and issues for incorporation into appropriate "A" and "C" schools for both engineering and food service personnel; developing training aids focused on repair, maintenance, operation, care and cleaning of food service equipment produced via video and/or computer; developing a "job aids" book for each piece of equipment; and the forming of cross-functional trained food service equipment repair/maintenance teams consisting of designated food service and engineering personnel.

Training may best be approached through a combination of the above options. Care must be taken to prioritize training deficiencies and pursue options that will provide the best return on investment. Additionally, training programs should be coordinated to prevent redundancy while being provided on a cyclic basis to support personnel rotations. Training will also need to address the impact of downsizing. Reductions will necessitate longer deployments and an increased need for shipboard personnel to be self-reliant in managing their equipment.

## Supply

The following describes alternatives which offer high potential for streamlining and enhancing the effectiveness of logistics support for food service equipment afloat. Methods for increasing the efficiency of supplying food service equipment are described for both the activities and organizations that manage food service equipment and for the individual supply systems.

*Navy Department and Shore Activities*: Currently, many logistics functions that are conducted and controlled by the FISCs are completely or partially manual, using punched cards and paper documentation. Newer construction ships are automated and have the theoretical ability to process supply actions faster with almost no paper involved. The application of electronic logistic processes is in place and must be extended to the entire Navy supply community. Automation should include user friendly screens and comprehensive on-line assistance. Also, the use of CD-ROM for technical manuals, a current NAVSEA initiative, will help to support a paperless Navy and insure the effective conveyance of all changes.

Internal processes which require search and cross-checks to determine item status and location should be investigated for reducing cycle and process times, as well as efficiently using inventory resources. Standardization of design and equipment would reduce costs and improve service to the afloat customers.

*Fleet Activities and Components Performing Supply Functions:* Fleet, Type and subordinate commands need to address streamlining and standardizing the supply system and procedures aboard ship. The functions and implementing instructions promulgated by the different commands should be analyzed to insure they impose no additional processing time on supply actions generated by individual ships. Additionally, the effects of these instructions should be investigated to determine the extent of any additional workload imposed on shipboard supply.

*Afloat Supply Organization:* There are several areas for supply process improvement aboard ship. Improvement in these areas involves a combination of streamlining, training and improvements in maintenance policies and procedures. Areas for improvement include:

- Identification of malfunction
  - ➜ Provide training for food service personnel in basic equipment mechanics so they can identify and report problems early on rather than waiting until the equipment fails.
  - ➜ Provide training for engineering personnel in galley equipment maintenance and repair.
  - ➜ Food Service Attendants assigned from the ship's Engineering Department, should act as liaisons between food service and engineering to facilitate galley equipment maintenance and repair.

- Decision to repair or replace
  - ➜ Provide food service personnel with a standardized replacement program, including decision making tools to support repair/replacement determination.
  - ➜ Develop experience factors for all food service equipment items to include a method for determining life cycle costs of replacements.
  - ➜ Advocate 1 for 1 replacements to promote supportability.
  - ➜ Provide supply personnel with a thorough knowledge of the supply system so they can make informed decisions regarding purchases including identification of item and procurement source

- Streamline documentation
  - ➜ Eliminate signatures and provide "information only" copies whenever possible.
  - ➜ Promote use of multi-functional documentation. Currently, separate forms are required to requisition an item, request material and maintenance support for the item, and in the case of replacements, turn-in of the old equipment. This process could be simplified by having one form generate purchase, support and turn-in of equipment.

- Document preparation
  - ➜ Provide training for all personnel in the proper methods for documenting repair and replacements.
  - ➜ Clarify ownership of equipment as it relates to documentation.
  - ➜ Coordinate equipment requisitions between supply, food service and engineering to insure the item being ordered is appropriate from both an operations and maintenance perspective and that it is supportable.

*Fleet Support:* Survey data indicates that requests and issue of food service equipment takes longer when the ship is deployed than when it is supported at pierside. Improvements in the following areas are key for food service equipment readiness during extended deployments.

- Emphasize equipment standardization and the use of 1 for 1 replacements.
- Enforce COSAL configuration management and support.
- Provide more on-site assistance and training in galley equipment operation, maintenance and repair in preparation for deployments.
- Update and disseminate demand and equipment performance data in preparing equipment and parts support loadouts for deployments.
- Develop and stock prepackaged part kits for food service equipment.
- Clearly designate procurement actions "for shipboard use" and provide cross-checks to insure compatibility/supportability.

*Integrated Navy Supply System:* The Defense General Supply Center (DGSC) is the Defense Logistic Agency inventory control point and item manager for food service equipment. Therefore, the Integrated Supply System will process the majority of Navy food service equipment transactions. It is critical that this system function quickly and accurately. The following recommendations should be considered.

- Allow the end user, the ship, to communicate requests directly to the DGSC. Necessary accounting information could be passed to the local FISC simultaneously via electronic means.
- Users should establish close coordination with the food service equipment manager at DGSC.
- DGSC should review equipment performance and demand data to optimize mix levels and local inventory.
- Disseminate equipment demand and performance data to ships.
- Consider removing all food service stocks from the FISCs and place them under DGSC control. The resulting order to ship type may be shorter than the time consumed by the current system in researching item availability and location within Navy resources.
- Reduce the inventory of parts and equipment by encouraging suppliers to support Just In Time (JIT) supply.
- Standardize food service equipment throughout the Navy and the other services

by reducing the number of different makes of similar equipment. CVC should be used to support the standardization of food service equipment.

- Solicit input from the end user/maintainer regarding equipment decisions throughout the ship's life cycle.
- Contract only for quality equipment.
- Contractual relationships with food service equipment suppliers should be prepared that reward quality, just-in-time supply, and proactive technical and training support.
- Provide comprehensive technical manuals which clearly identify Navy specific stock numbers.
- Provide interchangeability standards for replacement parts to reduce inventories.

*Navy Supply System*: The following recommendations address the current Navy Supply System. Recommendations are similar to those regarding the Integrated Supply System and may not be necessary if the earlier recommendations are followed.

- Analyze demand and performance data to determine optimum location and stockage objectives for food service equipment.
- Restructure the request and issue system to foster direct access by ships to the activity that can respond the quickest based on optimum location of stocks.
- Automate the entire system for all ships and move to a paperless system.
- Reduce the inventory of parts and equipment by encouraging JIT supply.
- Support efforts by fleet commands to develop and disseminate equipment demand and performance data to the food service equipment users.
- Standardize food service equipment throughout the Navy by reducing the number of different makes of similar equipment. CVC should be used to support the standardization of food service equipment.
- Solicit input from the end user/maintainer regarding equipment decisions throughout the ship's life cycle.
- Contract only for quality equipment.
- Contractual relationships with food service equipment suppliers should be prepared that reward quality, just-in-time supply, and proactive technical and training support.
- Provide comprehensive technical manuals which clearly identify Navy specific stock numbers.
- Provide interchangeability standards for replacement parts to reduce inventories.

*GSA Supply System:* Since this system is outside the purview of the Navy, the interface is the main area where improvements can be made. Currently, when an item is requested from GSA the

request and issue of the item goes through the FISC. Service would be improved if the ship could request directly from the GSA and, in turn, the GSA could issue directly to the ship. Electronic transmittal of data between GSA, the FISC, and the ship would serve to speed and document the process.

*Local Purchase Supply System:* The proliferation of different makes of food service equipment on board Navy ships is in large part due to the use of the Local Purchase Supply System. Many items secured through this process are not supported by the COSAL. Improved responsiveness of the Navy Supply System will help to alleviate the need for local purchase. Additionally, standardization of equipment, contracting with quality suppliers, and simplification of the COSAL process would address the major problems associated with local purchase.

The pierside supply review of the ship's request poses another problem to speedy supply of items. Pierside procurement should coordinate with the fleet and ships it supports to ensure all users know and understand the detailed procedures and data required for local purchase. This will speed up the review process and entail less wasted effort. Also, clearly designating procurement actions as being "for shipboard use" will help to insure Navy specific requirements are met, which, in turn, will improve the compatibility and supportability of the item.

## 3-M System

NAVSEA has taken the initiative to improve the understanding and implementation of the 3-M System through publication of updated manuals and the use of CD-ROM for the management of maintenance data. This initiative should be supported. Instructions should be more coherent and effective with responsibilities clearly defined and enforced to include equipment ownership and overall 3-M System implementation and control. Additionally, measures to promote the effective communication between Food Service, Supply and Engineering should be added. Once this has been accomplished, Engineering, Supply and Food Service personnel should be thoroughly trained in their respective 3-M duties. Training should include refresher courses in PMS and MDS.

A standard system for food service equipment replacement, based on expected service life, should be developed and incorporated into the 3-M System.

## Equipment Standardization

The lack of standardization in procurement and design of food service equipment and facilities has a direct, deleterious effect on the ability of the Navy to feed shipboard personnel and maintain its equipment. Standardizing equipment as well as the galley and associated spaces will

help to simplify training, supply, maintenance, and repair of food service equipment. However, the supply system must first be made more responsive to prevent the purchase of nonstandardized equipment to meet an immediate need.

Customer Value Contracting will provide the Supply Officer the ability to obtain a specific make and model of equipment in a timely manner. This program will assist the Navy in standardizing food service equipment across ships. CVC will only help in the ordering of specific stock numbers and the reduction of lead times for equipment purchases. It will not in itself promote standardization. In fact, it could conceivably exacerbate the current proliferation of equipment since equipment available through CVC is not limited to that authorized for shipboard use. It is therefore recommended that CVC be used to support new construction and major overhauls as well as required equipment replacements with the stipulation that strict accountability for equipment selection first be obtained. Restricting purchase authority may help to improve accountability.

## Equipment Management

A centralized fleetwide program may act as a catalyst to improve current operations. It may therefore be advisable to institute such a program, at least as an interim measure, to develop standardized equipment management practices and promote the training, acceptance, and use of these practices. The program would need to encourage self-sufficiency of ship's personnel in the area of equipment management and prevent dependency of ship's personnel on outside support.

This document reports research undertaken at the U.S. Army Soldier Systems Command, Natick Research, Development and Engineering Center and has been assigned No. NRDEC/TR-96/003 in the series of reports approved for publication.

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# APPENDICES

# Appendix A

# Shipboard Interviews

29 December 1994, 0900

## QUESTIONS FOR FOOD SERVICE EQUIPMENT SURVEY

Interview with LT. Corsey and MSC McDonald, of USS BAINBRIDGE, (CGN 25)

1. What is the process that a ship has to go through to obtain a replacement part for a piece of equipment (NSN item that is APL/COSAL supported)?

a. Supply Department personnel recognize the need.
b. Supply Department notify ship's Engineering Division.
c. Engineering Division identifies the part required.
d. Check SNAP II for onboard ship supply.
    1). If not available from onship assets, order through FISC.
    2). If not available from NSC, NSC will check with SPCC.
    4). If not available from SPCC, SPCC puts item out on award/contract.
    5). Received by SPCC, sent to ship.
    6). Received by NSC/ship.
e. Part received onboard ship.
f. Engineering Division installs part and executes testing.
g. Supply Division regains control of equipment.

2. What is the process that a ship has to go through to obtain replacement parts for an item that is not APL or COSAL supported?

a. Supply department personnel recognize the need.
b. Notify ship's Engineering Division.
c. Engineering Division identifies the part required.
d. Check SNAP II for onboard ship supply.
e. If not available from onship assets, research local contractors capable of providing the part at competitive price.
f. If not available from local contractor, contact manufacturer for closest distributors.
    1). Produce 1250 to order through pierside procurement contractor.
    2). Part received by pierside procurement.
g. Receive onboard ship.
h. Engineering Division install part and execute tests.
I. Supply Division regains control of equipment.

3. List (in priority) the problems most often faced by Food Service Officers or Supply Officers, in reference to Food Service Equipment?

Refrigeration units (small units)
Steam kettles, valves damaged or broken handles and loss of steam
Ice machines
Coffee machines

4. What is? What is it used for? Why?

MDS-Maintenance Data System? - SNAP II system
IMS-Intermediate Maintenance System? - not used onboard, maybe SUDAPS system that is found on tenders/carriers
Master PMS Manual? - Kept up by the PMS coordinator

5. Could you provide an approximate time frame for parts replacement from NSN system, from realization of a problem to replacement of the part? From 1 week up to 3 months

6. Could you provide an approximate time frame for part replacement of an open purchase part, from realization of a problem to replacement of the part? From 1 day up to 6 months

7. SPCC: Supply Parts Control Center : Is this group helpful in obtaining parts? What do they do? Parts locator, if they do not have the part they go to the Integrated Logistics Office. More information in Pub 485.

8. FISC: Fleet & Industrial Supply Center: Is this group helpful in obtaining parts? What do they do? -

9. Is Food Service Equipment dealt with in SNAP II? Can SNAP II support a parts and item database? (Shipboard Non-Tactical Automated Database Program-LCD Bridget McCurdy (804 - 444 -5414 LT Pry) Snap II is not adaptable to an outside database. However, SNAP III may be.

10. Could you provide a best and worst case time frame for replacement?

| | Best Time | | Realistic Time | |
|---|---|---|---|---|
| | Part | Item | Part | Item |
| Diagnosis | 1 Day | 1 Day | 1 Day | 1 Day |
| Research Item | 2-3 Hours | 2-3 Hours | 1 Day | 2 Days |
| Prepare request | 15 Minutes | 15 Minutes | 30 Minutes | 30 Minutes |
| Response from FISC/SPCC | 1 Day | 1 Month | 1 Month | 6 Month |
| Delivery to Ship from FISC/SPCC | 1 Day | 1 Day | 1 Week | 1 Week |
| Install by Ship's Force | 1 Day | 1 Day | 1 Week | 1 Week |

11. What is the average approximate dollar value of authorization for a:
Department Head designation is the deciding factor in dollar value of signature $9,999 or less
COMMANDING OFFICER $10,000 or more

12. Does the ship have keep breakdown/repair/replacement records for a specific period? Could I get copies of record? Yes we have these type of records, but we cannot provide due to some of the information on the reports. If part breaks down twice within six month period, it becomes a required part for the ship to carry in its onboard stores.
13. How do you feel that the process can be improved? Follow up action by ship's force personnel would help.

14. Do you order generic or specific NSN items from NAVSUP PUB. 533, Shipboard Foodservice Equipment Catalog? How much time do you spend researching a replacement piece of equipment? Is it difficult to obtain specific NSN's from the system? No. It would depend upon the requirements of the available space and the services required to utilize the equipment.

15. How often have you ordered one item but received a different item from system in substitution? It has not happened to me, but I have seen it happen on other ships.

16. How many pieces of Food Service Equipment does this class of ship have? Approximately 75 if considering reefers, steamers, grills, slicers, cookers, kettles, fryers, ovens ETC. (He wasn't exactly sure.)

17. Should each ship in a class of ships be required to have the same equipment? Would this help part interchangeability? Yes. All ships of a class having the same equipment would help a great deal. (This type of action would keep the variations in the number of parts down to a minimum.)

**18. Who has the primary concern for Food Service Equipment maintenance? Engineering Division, but there is not a dedicated person assigned from them to perform the required work.**

**19. How can Food Service Equipment be assigned ownership? Who should it be assigned to? The Supply Division should have ownership of their own equipment, but without the PMS training the Engineering Division must take ownership.**

**20. How can ships better perform the maintenance of the FSE? Increased and intensive training on the repair and upkeep of the equipment.**

**21. Should maintenance requirements be enforced with documentation? The Engineering Division documents PMS and provides this information to the 3-M Coordinator.**

**22. Should all ships, no matter what class, have the same equipment to allow for a more concise inventory of repair parts and replacement equipment? Yes. (This type of action would greatly decrease the number of parts that SPCC or FISC would have to keep on hand. Therefore, more a broader number of parts would be could be made available utilizing the same storage space.)**

**23. How can the acquisition phase of FSE be better controlled and improved? The people who perform the acquisition of FSE should talk with the people who have to use the equipment.**

**24. Should acquisition specifications require that items meet interchangeability standards? Yes. The number of repair, parts would be decreased.**

**25. Should interchangeability standards be developed? Yes. If each manufacturer was required to use a specific type of part, of specific size and capabilities, then interchangeability would be greatly enhanced. (If each manufacturer used a particular type of heating element or thermostat, more replacement parts would be available to ship while at sea.)**

**26. In what way do you feel that FSE maintenance can be improved? Improved training and improved communication within divisions.**

**27. How can the number of options for the same equipment's be reduced? The reduction in choices will help reduce the size of repair parts inventory. Decrease the variations of equipments and the variations between ships.**

**28. Should the DGSC warehouse of FSE be in Norfolk, Va? Is there be an DGSC warehouse kept on both coast? Unknown. Having the DGSC in Norfolk probably would not speed receiving equipment or parts.**

10 January 1995, 1300

**Interview QUESTIONS FOR FOOD SERVICE EQUIPMENT SURVEY**
**Interview with LT Campbell, Supply Officer of USS Arthur W. Radford, (DD 968)**

**1. What is the process that a ship has to go through to obtain a replacement part for a piece of equipment (NSN item that is APL/COSAL supported)?**
**a. Supply Department personnel recognize the need.**
**b. Supply Department notify ship's Engineering Division.**
**c. Engineering Division check/identify problem and the part(s) required.**
**d. Supply Division perform technical edit of Engineering Division information:**
**1). Cross check technical information supplied against APL and technical manuals.**
**2). Match APL information to Federal Stock System/FEDLOG, and check stock item manager for part availability.**
**e. Engineering Division check SNAP II for onboard ship supply.**
**1). If not available from onship assets, order through FISC.**
**2). If not available from NSC, NSC will check with SPCC.**
**4). If not available from SPCC, SPCC puts item out on award/contract.**
**5). Ship receives contract information that provides contract information and item ESD.**
**e. Part received onboard ship.**
**f. Engineering Division installs part and executes testing.**
**g. Supply Division regains control of equipment.**

**2. What is the process that a ship has to go through to obtain replacement parts for an item that is not APL or COSAL supported?**
**a. Supply Department personnel recognize the need.**
**b. Supply Department notify ship's Engineering Division.**
**c. Engineering Division check to identify the part required.**
**d. Supply Division perform technical edit of Engineering Division information:**
**1). Cross check technical information supplied against APL and technical manuals.**
**2). Match APL information to Federal Stock System/FEDLOG, and check stock item manager for part system availability.**
**e. Engineering Division check SNAP II for onboard ship supply.**
**1). If not available from onship assets, order through FISC.**
**2). If not available from NSC, NSC will check with SPCC.**
**4). If not available from SPCC, SPCC puts item out on award/contract.**
**5). Ship receives contract information that provides contract information and item ESD.**
**f. Part received onboard ship.**
**g. Engineering Division installs part and executes testing.**
**h. Supply Division regains control of equipment.**

**3. List (in priority) the problems most often faced by Food Service Officers or Supply Officers, in reference to Food Service Equipment?**
**Potato Peeler**
**Meat Tenderizer**
**Ice Cream Machine**
**Ovens**

**4. What is? What is it used for? Why?**
**MDS-Maintenance Data System? - SNAP II system**
**IMS-Intermediate Maintenance System? - unknown**
**MRC-Maintenance Requirement Cards**
**MIP-Maintenance Index Cards**

Master PMS Manual? - master kept up by the PMS coordinator

5. Could you provide an approximate time frame for parts replacement from NSN system, from realization of a problem to replacement of the part? From 2 days up to 8 weeks Stated that the engineers are not trained well enough to respond faster than this.

6. Could you provide an approximate time frame for part replacement of an open purchase part, from realization of a problem to replacement of the part? From 1 week up to 8 weeks The average would be about 2 weeks.

7. SPCC: Supply Parts Control Center : Is this group helpful in obtaining parts? What do they do? Yes. They act as Parts locators.

8. FISC: Fleet & Industrial Supply Center: Is this group helpful in obtaining parts? What do they do? They are very helpful. Process paperwork and provide some parts

9. Is Food Service Equipment dealt with in SNAP II? Can SNAP II support a parts and item database? (Shipboard Non-Tactical Automated Database Program-LCDR Bridget McCurdy(804 - 444 -5414 LT Pry) Yes FSE is dealt with in SNAP II. He doesn't think that SNAP II would be able to support an outside database.

10. Could you provide a best and worst case time frame for replacement?

| | Best Time | | Realistic Time | |
|---|---|---|---|---|
| | +Part | Item | Part | Item |
| Diagnosis | 1 Day | 1 Day | 1 Day | 1 Day |
| Research Item | 2 Hours | 3 Hours | 1 Day | 2 Days |
| Prepare request | 15 Minutes | 15 Minutes | 30 Minutes | 30 Minutes |
| Response from FISC/SPCC | 1 Day | 1 Month | 1 Month | 6 Month |
| Delivery to Ship from FISC/SPCC | 1 Day | 1 Day | 1 Week | 1 Week |
| Install by Ship's Force | 2 Hours | 1 Day | 3 Days | 4 Days |

11. What is the average approximate dollar value of authorization for a:
Department Head designation is the deciding factor in dollar value of signature $9,999 or less
COMMANDING OFFICER $10,000 or more

12. Does the ship have keep breakdown/repair/replacement records for a specific period? Could I get copies of record? No. (?) However, if a part breaks down twice within six month period, it becomes a required part for the ship to carry in its onboard stores.

13. How do you feel that the process can be improved? Standard on ship/base classes.

14. Do you order generic or specific NSN items from NAVSUP PUB. 533, Shipboard Foodservice Equipment Catalog? How much time do you spend researching a replacement piece of equipment? Is it difficult to obtain specific NSN's from the system? Yes a toaster and a, coffee urn. (He felt that CVC was going to help him a great deal).

15. How often have you ordered one item but received a different item from system in substitution? It has happened to me 3 or 4 times, I ordered an upright toaster and they sent me a horizontal unit.

**16. How many pieces of Food Service Equipment does this class of ship have? Approximately 50 if considering reefers, steamers, grills, slicers, cookers, kettles, fryers, ovens ETC.**

**17. Should each ship in a class of ships be required to have the same equipment? Would this help part interchangeability? Yes. All ships of a class having the same would help a great deal.**

**18. Who has the primary concern for Food Service Equipment maintenance? Engineering Division**

**19. How can Food Service Equipment be assigned ownership? Who should it be assigned to? The Supply Division should have ownership of their own equipment, but without the PMS training the Engineering Division must take ownership.**

**20. How can ships better perform the maintenance of the FSE? Increase PMS, standardize equipments.**

**21. Should maintenance requirements be enforced with documentation? The Engineering Division documents PMS and uses a Q A form.**

**22. Should all ships, no matter what class, have the same equipment to allow for a more concise inventory of repair parts and replacement equipment? Yes.**

**23. How can the acquisition phase of FSE be better controlled and improved? Upgrade the 533, and keep it updated through addendums each year.**
**24. Should acquisition specifications require that items meet interchangeability standards? Yes. The number of repair, parts would be decreased.**

**25. Should interchangeability standards be developed? Yes. (If each manufacturer was required to use a specific type of part, of specific size and capabilities, then interchangeability would be greatly enhanced. If each manufacturer used a particular type of heating element or thermostat, more replacement parts would be available to ship while at sea.)**

**26. In what way do you feel that FSE maintenance can be improved? Improved training and better communications between divisions.**

**27. How can the number of options for the same equipment's be reduced? The CVC should help reduce the variations of equipments.**

**28. Should the DGSC warehouse of FSE be in Norfolk, Va? Is there be an DGSC warehouse kept on both coast? Yes. (Having the DGSC in Norfolk may/should speed the parts support of equipment and parts.**

17 January 1995, 0900

Interview QUESTIONS FOR FOOD SERVICE EQUIPMENT SURVEY
Interview with, LT Grace, Supply Officer of USS THORN, (DD 988)

1. What is the process that a ship has to go through to obtain a replacement part for a piece of equipment (NSN item that is APL/COSAL supported)?
a. Supply Department personnel recognize the need.
b. Supply Department notify ship's Engineering Division.
c. Engineering Division check out the problem/identify problem and the part(s) required/set up a "job" in the SNAP II computer system.
d. Supply Division perform technical edit of Engineering Division information:
1). Cross check technical information supplied against APL and technical manuals.
2). Match APL information to Federal Stock System/FEDLOG, and check stock item manager for part availability.
e. Engineering Division check SNAP II for onboard ship supply.
1). If not available from onship assets, order through FISC.
2). If not available from NSC, NSC will check with SPCC.
4). If not available from SPCC, SPCC puts item out on award/contract.
5). Ship receives contract information that provides contractor and item ESD.
e. Part received onboard ship.
f. Engineering Division installs part and executes testing.
g. Supply Division regains control of equipment.

2. What is the process that a ship has to go through to obtain replacement parts for an item that is not APL or COSAL supported?
a. Supply Department personnel recognize the need.
b. Supply Department notify ship's Engineering Division.
c. Engineering Division check to identify the part required.
d. Supply Division perform technical edit of Engineering Division information:
1). Cross check technical information supplied against APL and technical manuals.
2). Match APL information to Federal Stock System/FEDLOG, and check stock item manager for part system availability.
e. Engineering Division check SNAP II for onboard ship supply.
1). If not available from onship assets, order through FISC.
2). If not available from NSC, NSC will check with SPCC.
4). If not available from SPCC, SPCC puts item out on award/contract.
5). Ship receives contract information that provides contract information and item ESD.
f. Part received onboard ship.
g. Engineering Division installs part and executes testing.
h. Supply Division regains control of equipment.
* If an item needs repair twice within six months a General Feedback Report is generated by ship that is set to the planning yard for action. Planning yard then recommends that the required parts are carried as part of the ship's standard load out.

3. List (in priority) the problems most often faced by Food Service Officers or Supply Officers, in reference to Food Service Equipment?
Equipment that is non-parts supported, and "not sailor proofed" equipment (it is not possible to build equipment that is sailor proof). This simply makes a better case for a parts support program.

4. What is? What is it used for? Why?
MDS-Maintenance Data System? - SNAP II system-feedback system, CK4790's, open jobs and monitor jobs.
IMS-Intermediate Maintenance System? - ?

MRC-Maintenance Requirement Cards - PMS card that tells what, when, who, parts required, and tools required for the PMS of a specific piece of equipment.
MIP-Maintenance Index Cards - Similar to MRC for each piece of equipment.
Master PMS Manual? - Master kept up by the PMS coordinator per the 3M manual.

5. Could you provide an approximate time frame for parts replacement from NSN system, from realization of a problem to replacement of the part? On a walk through item 24 hrs, normally from 2 days up to 6 weeks.

6. Could you provide an approximate time frame for part replacement of an open purchase part, from realization of a problem to replacement of the part? From 2 weeks up to 6 weeks.

7. SPCC: Ships Parts Control Center : Is this group helpful in obtaining parts? What do they do? Yes. DLA is taking over this function.

8. FISC: Fleet & Industrial Supply Center: Is this group helpful in obtaining parts? What do they do? Yes they are helpful in obtaining parts. They act as middle man in parts supply. DLA distribution system.

9. Is Food Service Equipment dealt with in SNAP II? Can SNAP II support a parts and item database? (Shipboard Non-Tactical Automated Database Program-LCDR Bridget McCurdy(804 - 444 -5414 LT Pry) Yes FSE is dealt with in SNAP II. He wasn't sure.

10. Could you provide a best and worst case time frame for replacement?

| | Best Time. | | Realistic Time | |
|---|---|---|---|---|
| | +Part | Item | Part | Item |
| Diagnosis | Hours | Hours | 1 Week | 1 Week |
| Research Item | 2 Hours | 3 Hours | 1 Week | 2 Weeks |
| Prepare request | 20 Minutes | 20 Minutes | 30 Minutes | 30 Minutes |
| Response from FISC/SPCC | 1 Week | 1 Week | 1 Month | 6 Month |
| Delivery to Ship from FISC/SPCC | 1 Day | 1 Day | 1 Week | 1 Week |
| Install by Ship's Force | 2 Hours | 1 Day | 3 Days | 4 Days |

11. What is the average approximate dollar value of authorization for a:
Department Head designation is the deciding factor in dollar value of signature $2,500 or less
COMMANDING OFFICER $5,000 or more

12. Does the ship have keep breakdown/repair/replacement records for a specific period? Could I get copies of record? SNAP II.

13. How do you feel that the process can be improved? Bring back NSC and get rid of DLA.

14. Do you order generic or specific NSN items from NAVSUP PUB. 533, Shipboard Foodservice Equipment Catalog? How much time do you spend researching a replacement piece of equipment? Is it difficult to obtain specific NSN's from the system? He tries to order specific. However, he often received a generic item in its place.

15. How often have you ordered one item but received a different item from system in substitution? I ordered an upright toaster and they sent me a gas toaster. The ship cannot support a gas toaster.

16. How many pieces of Food Service Equipment does this class of ship have? Approximately 48 if considering reefers, steamers, grills, slicers, cookers, kettles, fryers, ovens ETC.

17. Should each ship in a class of ships be required to have the same equipment? Would this help part interchangeability? Yes / Yes

18. Who has the primary concern for Food Service Equipment maintenance? Engineering Division

19. How can Food Service Equipment be assigned ownership? Who should it be assigned to? The Engineering Division should take ownership.

20. How can ships better perform the maintenance of the FSE? Higher priority on FSE.

21. Should maintenance requirements be enforced with documentation? This already is accomplished through 3M and Maintenance Data System.

22. Should all ships, no matter what class, have the same equipment to allow for a more concise inventory of repair parts and replacement equipment? Yes.

23. How can the acquisition phase of FSE be better controlled and improved? CVC should improve the acquisition phase of Food Service Acquisition. Quarterly surveys.

24. Should acquisition specifications require that items meet interchangeability standards? Yes.

25. Should interchangeability standards be developed? Yes. (If each manufacturer was required to use a specific type of part, of specific size and capabilities, then interchangeability would be greatly enhanced. If each manufacturer used a particular type of element or thermostat, more replacement part storage room would be available to ship while at sea).

26. In what way do you feel that FSE maintenance can be improved? Higher priority of FSE repairs.

27. How can the number of options for the same equipment's be reduced? The CVC should help reduce the variations of equipments.

28. Should the DGSC warehouse of FSE be in Norfolk, Va? Is there be an DGSC warehouse kept on both coast? Yes. Yes (Having the DGSC in Norfolk may/should speed the parts support of equipment and parts.

# Appendix B

# List of Acronyms

# LIST OF ACRONYMS

AC&R - AIR CONDITIONING & REFRIGERATION

AEL - ALLOWANCE EQUIPMENT LIST

APL - ALLOWANCE PARTS LIST

ASSR - AUXILIARY SHIPS SYSTEMS REVIEW

CEMAT - CARRIER ENGINEERING MAINTENANCE ASSIST TEAM

CINC - COMMANDERS-IN-CHIEF

CLER - CARRIER LIFE ENHANCING REPAIRS

CNAP - COMMANDER NAVAL AIR PACIFIC

CNO - CHIEF OF NAVAL OPERATIONS (OP-04)

CO - COMMANDING OFFICER

COMNAVAIRLANT - COMMANDER NAVAL AIR FORCE, U.S. ATLANTIC FLEET

COMNAVAIRPAC - COMMANDER NAVAL AIR FORCE, U.S. PACIFIC FLEET

CONFORM - CONCEPT FORMULATION GROUP

COSAL - COORDINATED SHIPBOARD ALLOWANCE LIST

CPO - CHIEF PETTY OFFICER

CSMP - CURRENT SHIP'S MAINTENANCE PROJECT

CVC - CUSTOMER VALUE CONTRACT

DGSC - DEFENSE GENERAL SUPPLY CENTER

DLA - DEFENSE LOGISTICS AGENCY

DPMA - DEPOT PRE MAINTENANCE ACTIVITY

# ACRONYMS (CONT'D)

DRMO - DEFENSE REVITALIZATION MATERIAL OFFICE

DSRA - DRYDOCK SHIP RESTRICTED AVAILABILITY

EDF - ENLISTED DINING FACILITY

EM - ELECTRICIAN'S MATE

EQOL - ENHANCED QUALITY OF LIFE

ESR - ENGINEERING SERVICES REQUEST

ET - ELECTRONICS TECHNICIAN

FISC - FLEET INDUSTRIAL SUPPLY CENTER

FMT - FOOD MANAGEMENT TEAM

FOSSAC - FITTING OUT & SUPPLY SUPPORT ASSISTANCE CENTER

FSA - FOOD SERVICE ATTENDANT

FSD - FOOD SERVICE DIVISION

FSO - FOOD SERVICE OFFICE

ILO- INTEGRATED LOGISTICS OVERHAUL

ILR - INTEGRATED LOGISTIC REVIEW

ILS - INTEGRATED LOGISTIC SUPPORT

IMA - INTERMEDIATE MAINTENANCE ACTIVITY

IMIP - INVENTORY MANAGEMENT IMPROVEMENT PROGRAM

IMMS - INTERMEDIATE MAINTENANCE MANAGEMENT SYSTEM

INSURV - BOARD OF INSPECTION & SURVEY

# ACRONYMS (CONT'D)

ISSOP - INTRAFLEET SUPPLY SUPPORT OPERATIONS PROGRAM

ISSOT - INTRAFLEET SUPPLY SUPPORT OPERATIONS TEAM

LCMP - LIFE CYCLE MAINTENANCE PLANNING

LMA - LOGISTIC MANAGEMENT ASSESSMENT

3M - (SHIPS) MAINTENANCE & MATERIAL MANAGEMENT SYSTEM

MDMAA - MESSDECK MASTER-AT-ARMS

MDS - MAINTENANCE DATA SYSTEM

MLSF - MOBILE LOGISTICS SUPPORT FORCE

MM - MACHINISTS MATE

MRC - MAINTENANCE REQUIREMENT CARD

MS - MESS MANAGEMENT SPECIALIST

NAMSO - NAVY MAINTENANCE SUPPORT OFFICE DEPARTMENT

NAVFSSO - NAVY FOOD SERVICE SYSTEMS OFFICE

NAVMASSO - NAVY MANAGEMENT SYSTEMS SUPPORT OFFICE

NAVSEACENs - NAVAL SEA SUPPORT CENTERS

NAVSEALOGCEN - NAVAL SEA LOGISTICS CENTER

NAVSEASYSCOM - NAVAL SEA SYSTEMS COMMAND

NAVSUP - NAVY SUPPLY

NEC - NAVY ENLISTED CLASSIFICATION

NOB - NAVAL OPERATING BASE

# ACRONYMS (CONT'D)

NRCC - NAVY REGIONAL CONTRACTING CENTER

NSC - NAVAL SUPPLY CENTER

OMMS - ORGANIZATIONAL MAINTENANCE MANAGEMENT SYSTEM

OPNAV - NAVAL OPERATIONS

OPNAV 4790/2K - SHIP'S MAINTENANCE ACTION FORM

OPNAV 4790/CK - SHIP'S CONFIGURATION CHANGE FORM

OPTAR - OPERATIONAL TARGET ALLOWANCE

PERA-CV - OFFICE OF PLANNING & ENGINEERING REPAIR AIRCRAFT CARRIERS

PMRs - PERIODIC MAINTENANCE REQUIREMENTS

PMA - PHASED MAINTENANCE AVAILABILITY

PMR - PLANNED MAINTENANCE REQUIREMENT

PMS - PLANNED MAINTENANCE SYSTEM

POT/I - PRE OVERHAUL TEST & INSPECTION

PQS - PERSONAL QUALIFICATION STANDARDS

PRRP - PHASED RENOVATION & REPAIR PROGRAM

RAS - REPLENISHMENT AT SEA

RA/TA - RESTRICTED AVAILABILITY/TECHNICAL AVAILABILITY

RDO - REPAIR DUTY OFFICER

REFTRA - REFRESHER TRAINING

RSG - READINESS SUPPORT GROUP

# ACRONYMS (CONT'D)

S2 - ENLISTED FOOD SERVICE DIVISION

S5 - WARD ROOM FOOD SERVICE DIVISION

SAM - SHIP'S AVAILABILITY MANAGEMENT

SEAMAT - SURFLANT ENGINEERING & MAINTENANCE ASSIST TEAM

SEL's - SELECTED EQUIPMENT LISTS

SHIPALTS - SHIP ALTERATIONS

SIMA - SHIP INTERMEDIATE MAINTENANCE ACTIVITY

SLEP - SERVICE LIFE EXTENSION PROGRAM

SMI - SUPPLY MATERIAL INSPECTION

SNAP - SHIPBOARD NON-TACTICAL AUTOMATED DATA PROCESSING PROGRAM

SPAWARSYSCOM - SPACE & NAVAL WARFARE SYSTEMS COMMAND

SPCC - SHIPS PARTS CONTROL CENTER

SRA - SHIP RESTRICTED AVAILABILITY

SUPSHIPS - SUPERVISOR OF SHIPBUILDING, CONVERSION AND REPAIR

SYSCOM - SYSTEM COMMAND

TYCOM - TYPE COMMAND

UPK - UPKEEP

VRL - VENDOR RECOMMENDED LIST

XO - EXECUTIVE OFFICER

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